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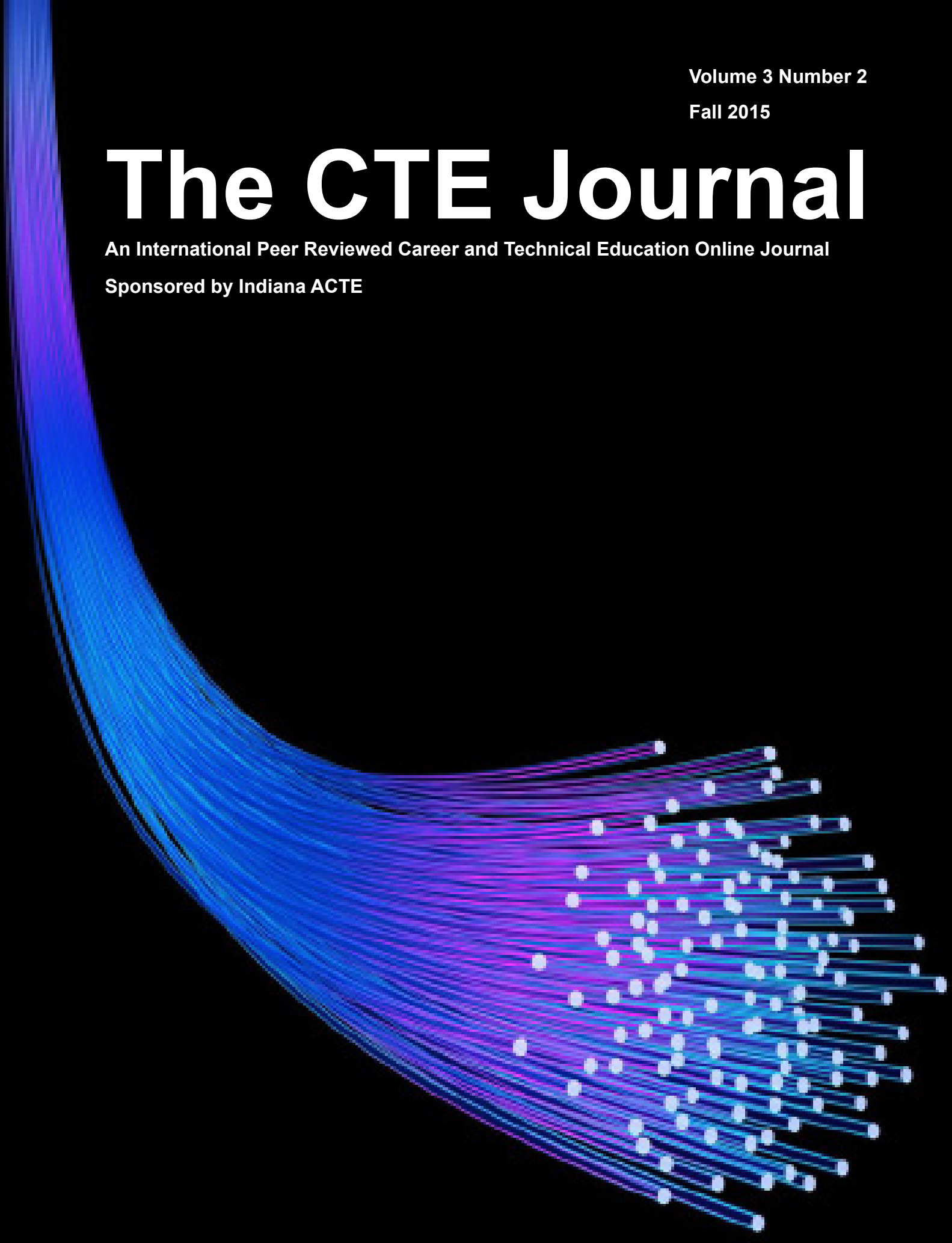

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The Building Blocks for Enhanced Technological Literacy

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Abstract

Many students have experience with smart phones, internet browsing, and social networking. Although exposure to these types of technologies are pure indicators of society's evolution towards a more integrated and pervasive computing environment, they do not serve as accurate indicators of technological literacy. With the advent and rapid expansion of knowledge and technology intensive industries, these skills do not provide a sufficient core/foundational literacy to the development of characteristics possessed by technologically literate students. Gonzales and Renshaw (2005) identified six computing competency skill areas for pre-engineering majors – 1) Computer use and file management, 2) Word processing, 3) Spreadsheets, 4)Databases, 5) Presentations, and 6) Information and Communications. These competencies, previously the focus of engineers, have now transferred to society at large with 38% of all the value created in the U.S. requiring the skills of a technologically literate workforce (National Science Board, 2010). The widespread use of technology in society and everyday life has forced the need of technological literacy amongst non-Science, Technology, Engineering and Mathematics (STEM) majors, hence the need for a comprehensive course that provides the building blocks for technological literacy. However, there is still skepticism on the value of classes that focus on the introduction of computers. These classes lay the foundation that is crucial for non-STEM majors to become technologically literate. The goal of this paper is to show that there is still a need for these types of classes and also that they provide a gateway for these students to become technologically literate before their graduation. By reviewing the performance of 130 students in an introductory level computing course at Indiana State University the need for such a class will be evidenced.

Introduction

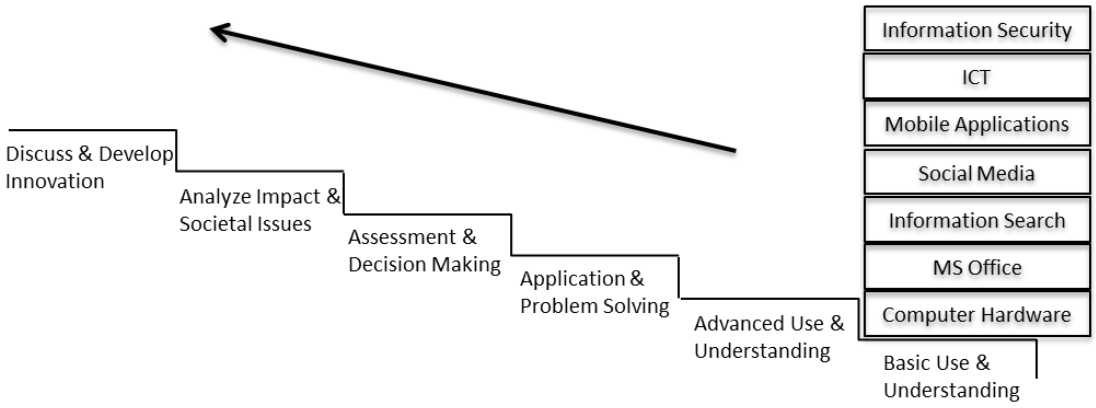
In an age of persuasive technology, eliminating introductory computer courses from course schedules would be a disservice to students. The fact that a large percentage of students can browse the internet and use cell phones does not indicate that they are computer or technologically literate. Potential employers will require more technical skills and abilities. In addition, student must learn how to use other applications that

support problem solving and decision making in business or research settings. Introductory courses must be redesigned to account for the evolution of information communication technology and the level of its rapid integration into the different aspects of society over the years. The courses need to extend the content and learning objectives to include higher order computing concepts. These are the building blocks that will provide students, non-majors, with the tools needed to achieve the higher order goal of becoming technologically literate (Branchet & Jullien, 2009).

Students should be challenged to acquire higher levels of aptitude. Now that students are more technically apt, we can remove lessons on how to double-click and open a browser. We should start integrating lessons more relevant to current technological use in industry, academia, research, and society. There will still be a difference between computer science, engineering, and non-STEM majors. The introductory computing course design supported by this study does not promote programming or circuit building. Our proposal builds on previous studies call to integrate higher order of computing components - information search, and information communication technology, mobile applications, social media, and information security components. For instance, communication technology serves as the main means by which information is obtained by information seekers in the 21st century. The proliferation of these technologies makes it necessary for its potential users to be able to use, manage and understand how to obtain, in as efficient a manner as is possible, the information which they seek. Due to the overlapping nature of all these devices it is necessary that potential users be aware of the advantages and disadvantages of these devices.

Recent efforts have been emphasizing the need increase the number of STEM programs and graduates, which is supported by the authors. In addition, non-STEM majors cannot be left behind to increase problematic dimensions of the digital divide. Non-STEM majors need the experience and exposure to the higher order components - the building blocks – to make them employable and productive members of today's society (See Figure 1). Basic use and understanding is only the first step/block. This refers to the introduction of the steps and their primary functions or features. Advanced use and understanding would be the next step which allows students to complete more complicated functions and tasks. A classic example would be the creation of a template in MS Word to draft an APA style research paper. The following step creates a stimulating learning experience by incorporating problem solving and application of learned lessons. The first three steps create strong computer literate students.

Figure 1: Critical Steps to Obtain Technological Literacy



Technological literacy implies knowledge, ability, responsibility, and capability, which are related to the last steps in Figure 1, are important. Assessment and Decision Making skills will demonstrate students' critical thinking regarding technological issues. Analysis of technological impact on society prompts the ability to engage and identify technology that reflects the culture and value of the intended society. Finally, Discuss and Development Innovation illustrates the students' knowledge via articulation of the pervasiveness of technology in everyday life. The first three steps are critical for non-STEM majors and provide a strong pathway to achieving objectives defined for technological literacy. The building blocks are essential for the improving introductory computing courses.

In the following sections, learning objectives for a redesigned Introduction to Computers course will be presented. In addition, data will be presented to support the continued need of these types of introductory courses.

Background

There are many debates concerning the elimination of introductory computer courses as a requirement, especially for non-majors. According to Watkins *et al*, most of today's students have grown up with computers, and have been using them for years. Although this may appear as a benefit and support for eliminating the course, it is not a benefit. It actually equipped the students with a sense of overconfidence – "because these students have mastered email, the web, and instant messaging, they feel they already know everything a computer can do"(Watkins, Byars, & Barry, 2005). The results published in Watkins *et al* demonstrated an average percentage overestimation of proficiency of Microsoft application by 25%. These basic computer skills alone do not offer an adequate foundation for students to excel towards acceptable levels of technological literacy.
For example, students may have a great amount of experience surfing Facebook. Their experience demonstrates an ability to connect with others via this application increasing awareness of friends' activities, but most students are not aware that companies collect

user activity, which provides great marketing data, insights on users' habits, and profitable interactions. In addition, students' posts have been unfiltered and potentially hazardous because they are unaware of the impact of such accessible information. Students need to learn more than how to login to new applications. They must make responsible sociotechnical decisions and analyze impacts. Furthermore, experience with social media applications does not satisfy the technical experience criteria for future employers.

The downstream outputs of basic level research and development, concentrated in the fields of Science, Technology, Engineering and Mathematics (STEM), have had a profound impact on the global marketplace. These technologies have led to the creation of work environments that relish the use and extensive adoption of new technology that improves productivity. Knowledge and Technology Intensive (KTI) industries accounted for 30% of global economic output in 2007 and have resulted in the creation of jobs that span service and high-technology manufacturing(National Science Board, 2010). For every one manufacturing job that has been created over the last decade there has been seven to eight service sector jobs that have been created (Bureau of Labor Statistics, 2014). For non-STEM majors the majority of jobs that will be available to them in the future will be in the area of Information and Communications Technology (ICT). ICT relates to the use of technologies that are specific to computers and office machinery, as well as, communication services and its surrounding equipment technologies(National Science Board, 2010). Critical to students with non-STEM backgrounds is their ability to analyze the impact of technology on society and then utilize and/or contribute to the improvement and evaluation of existing technologies. A technological literate user must be fluent with the tools and techniques necessary for constructive participation in society. A technologically literate student, therefore, is one who has a working knowledge of concepts, techniques and jargon utilized by professionals in the STEM field, the creators of such technologies (Gustafson, Krupczak, & Young, 2011; National Academy of Engineering, 2011).

The purpose of this study is to demonstrate the importance of computer literacy and introductory computer courses via its relationship to technological literacy (TL) and students' lack of critical computer skills. Utilizing the International Technology Education Association's (ITEA) Standards for Technological Literacy (STL) a conceptual model of technological literacy can be formulated. This model illustrates the basic undergirding of TL which makes it easier for the launch an investigation of the efficacy of CL as it pertains to TL. At Indiana State University, students completing their bachelors in Social Work are required to take and introduction to computers class. The course covers topics ranging from the installation of software needed for the class to being competent in the Microsoft Windows 7 and Office environments. While taking the course does not make these students technologically literate, it provides an undergirding that makes them more cognizant of the STL content.

Technological Literacy

Technology can be conceptually defined as a modification that has been made to the natural environment through innovation, change or modification in an effort to fulfill apparent human necessities and desires(International Technology Education Association, 2003). Technology represents devices, the capabilities these devices offer and the knowledge surrounding them. This concept and its' tangible assets are so pervasive that in today's work environment employers most often refuse to train employees on the most common of these. Employees are expected to be familiar with the most commonly used technologies and they are also expected to possess an ability to discern and adapt to new technologies. Possessing such a broad understanding of technology one could define such a person as being literate in technology. Literacy, in a technological sense, can be described as a basic level of education that allows one to be familiar with related technologies. Technological literacy is the basic understanding of technology that allows one to be able to use, manage, and understand technology (International Technology Education Association, 2007).

Although TL's recognized importance in today's society, TL has not been a significant focus of instruction and assessment in K-12 curriculum or post-secondary education outside of engineering and computer science for years[5]. Initiatives, studies, and reports from the National Academies, National Science Foundation, and academic institutions nation-wide established a foundation for the development of TL concepts, standards, educational objectives, and assessment. At the K-12 level, the National Academies reports (Gustafson et al., 2011)have defined TL as "an understanding of technology at a level that enables effective functioning in a modern technological society." (Gustafson et al., 2011) In addition, three major cognitive dimensions were identified: knowledge, capabilities, and critical thinking and decision making within four content areas (technology and society, design, products and systems, and characteristics).

For post-secondary education, researchers' efforts extended the reach of TL from the limited areas of engineering and computer science to non-majors. Gustafson *et al.*, developed a model set of educational objectives and outcomes that are mostly congruent with publications from International Technology Engineering Association and ABET, with slight deviations to account for a lower level of mastery for some aspects appropriate for non-majors. In higher-education there are four objectives that are considered to be high-priority TL objectives for non-STEM majors. These objectives are described as follows(Gustafson et al., 2011): 1) knowledge of the impact technology has on our natural surroundings, 2) an ability to understand and explain the impact technology has had and is having on our world, 3) an awareness of the traits of individual and communal responsibility when consuming and crafting technology and 4) an ability to critically dissect technological advancements across both general and specific domains. Additionally, Gustafson *et al.* published eighteen outcomes that align with the objectives listed above.

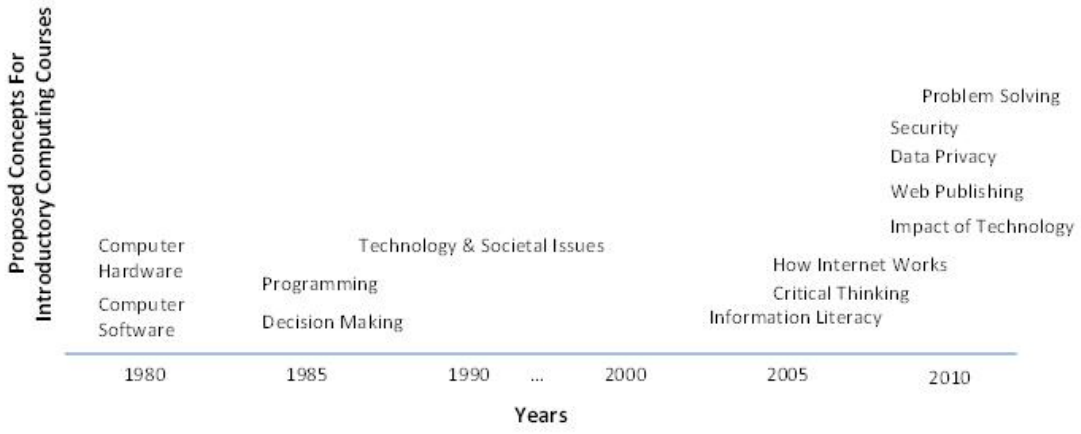
Computer Literacy

The study of computers dates back to the 1980s. Since, computer competency and computer literacy have been discussed in many venues. There have been many variations of the definition of computer literacy in publications over the years. The constant evolving nature of computers and technology-related fields, systems, and devices may be the major contributor. Although the definitions have varied, the increasing relevance of computer skills and applications is a consistent agreement among researchers, industry workers, and educators. Ezziane (2007) denotes the following definition of computer literacy, "as understanding computer characteristics, capabilities, and applications as well as the ability to implement this knowledge in the skillful, productive use of computer application to individual roles in society" (p. 178).

Academic institutions have been charged with the responsibility to educate and support the development of student's computer skills and capabilities. Many computer science and engineering programs have accepted the charge and provided courses that provide the instruction and courses needed for STEM majors. In addition, introductory computer courses are offered for non-majors. The list of introductory computer courses offered by these programs can vary greatly from one institution to the next. Among the more common courses are Introduction to Computer Science and Programming and Introduction to Computers. The latter course is usually the one customized for non-majors and computer literacy. From a survey of 160 institutions, Epperson reported 60% offered credit-based computer introductory courses. Of the 60%, 35% listed the course as a requirement for all students and 34.5% listed the course as an elective (Epperson, 2010).

Introduction to Computers/Computing courses are low level courses that provide basic computer competencies that the students will need as they move through the curriculum. Components related to MS Office skills are the most common; however, institutions displayed common integration of technical terminology and computer security. Over the years, the components of the course have been evaluated and modified. Below is a timeline that illustrates the linage of proposed additions to the course components.

Figure 2: Proposed Concepts for Introductory Computing Courses



Mostly, the objectives of this course are related to computer basics. As the graph above illustrated, more emphasis on supporting elements and advanced topics are starting to emerge. Below is a short example of learning objectives and outcomes from Introduction to Computers/Computing courses from different universities.

- Familiarity and comfort with basic computing concepts and the ubiquity of computers.
- Fluency in finding, evaluating, processing and presenting information.
- Exploratory knowledge of the art and science of information presentation.
- Define and describe the hardware used in information technology (IT).
- Define and describe the types of software used in IT.
- Define and describe the different aspects of computer security, privacy, and ethics.
- Delineate and discuss societal issues involving the use of IT and networks.
- Demonstrate the ability to create and use documents, spreadsheets, presentations and databases in order to communicate and store information as well as to support problem solving.
- Use IT to acquire, differentiate and evaluate information and technology.
- Demonstrate an understanding of the manipulation of vector graphics in PowerPoint.
- Create Web pages from Microsoft Office applications.
- Demonstrate methods of sharing information between Office applications.

From reviewing the syllabi for these different institutions, instructors are developing learning experiences based on problem-based learning and hands-on techniques. An in-depth review of the courses, revealed a commonality of projects, lectures, assignments, and exams centered on Microsoft Office applications and popular internet browsers.

Implementation Methods

An Introduction to Computers is a general level course that encompasses the basics of computer function and use. The course assumes that the student has limited prior experience with computers and therefore needs to be briefed on the critical facets of a computer system. This exposé ranges from the comparison of different types of computers (handheld, personal, mainframe, and supercomputers) to the identification of popular software applications and cloud computing platforms. Once this section is completed students then move on to learning how manage files within the Windows 7 operating system. Reintroduced is the usage of the most prominent browsers available and how to use the Microsoft office platform to check their student emails. For the rest of the class students are introduced to Microsoft Word, Excel, Access and PowerPoint. Once competency has been achieved their knowledge of these office products are then utilized in an integrated final project. Once the concept of cloud computing has been introduced, it is simultaneously reinforced through usage as all files create are managed through Microsoft's One drive.

While the course may seem to be rudimentary at first, subtle topics such as file size and processing speed are discussed in an effort to engender a broader understanding of some of the critical metrics used to gauge a computer system. This skill is transferable to other areas of life such as determining weight, length and volume in the metric system of measurement. With this basic understanding students then progress to determining what an operating system is and how this software application is found on any computing device. Due to the interrelated concepts surrounding these devices students are provided foundation for being technologically literate through the use of computers. Being able to do simple queries in a database and that off a more refined search on Google a similar in nature and is constantly being reinforced in the Introduction to Computers class. The class therefore provides the basics foundations of being technologically literate. The basics of technological literacy follow the critical steps identified earlier, that of: a basic use and understanding of computing technology, an advanced use and understanding of computing technology and an ability to solve problems germane to computing technology.

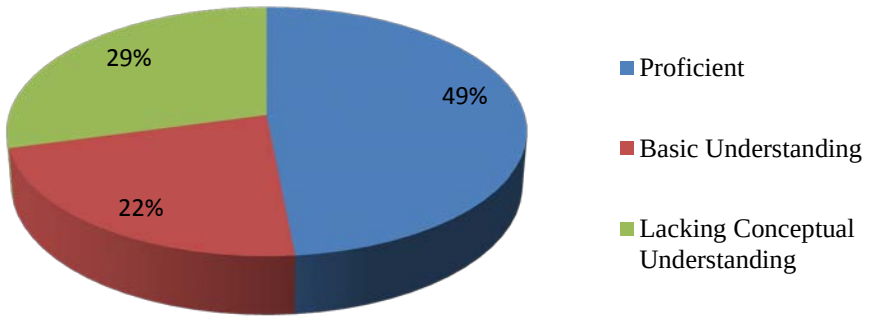
In an effort to map topics from the Introduction to Computers class, to that of technological literacy, a basic use and understanding of computing technology can be derived from lessons that are covered the essentials of computing systems. These lessons entail the understanding of operating systems and how they are useful for meta-level processes such as file management, communication and information gathering. An advanced use and understanding of computing technology is derived from the conventional and unconventional usage of software applications germane to the operating system in the manipulation of gathered data. For example, students utilize the Microsoft Access database and perceive their usage of this software application as being unconventional. Their unconventional usage of this software application teaches them how to do queries which is an essential concept to grasp when using what they consider to be a conventional database, a Google search, in their final assignment.

By being able to use, manipulate and understand differing software applications and platforms students are now able to problem solve. This problem solving skill is displayed in the final integrative assignment that requires them to employ object linking and embedding in the office platform. Application and Problem solving, basic and advanced use of computing technology can be mapped to Introduction to computing through the first test which assesses one's basic understanding of computing systems. A complete understanding of this topic is reflected in the test one results, in which students must achieve a grade of 80% or more. Computer competency is displayed in the culminating assignments in surrounding word processing, spreadsheets and data base management. The culminating assignments build on three prior tutorials that are sequential in nature. The accomplishing of these critical assignments reflects competency and is also something that is documented. Finally application and problem solving is displayed in the open-ended final assignment that requires the integrative linking of word processing, spreadsheets, databases and presentation software.

Results

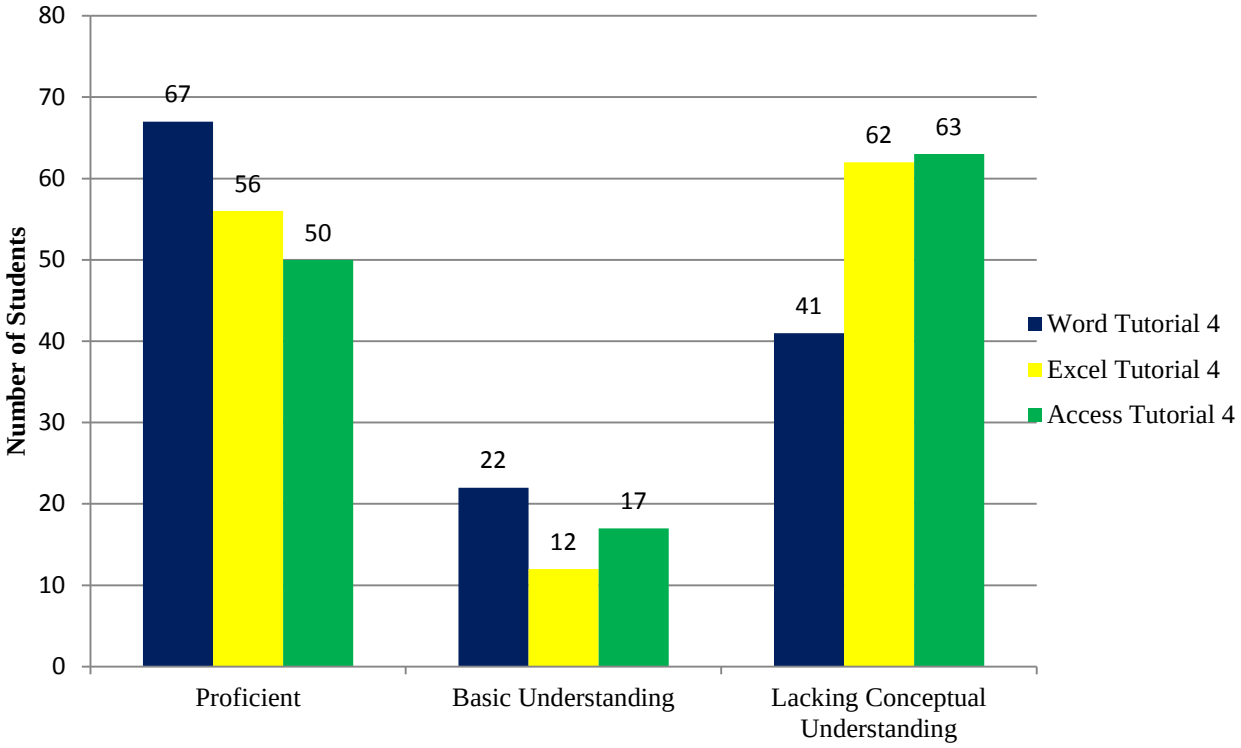
After three semesters of data collected regarding 130 non-STEM students, their proficiency is obtained when students make a grade of 80% or more on their first exam (which assesses their basic use and understanding of computing technology) or when they have completed their culminating assignments in their entirety. If students completed up to 80% of their assignments they have a basic understanding of the software and its capabilities. Below 70% completion students lack a conceptual understanding of computing technology or computer software capabilities. For the first set of data collect a basic understanding of computing technology was analyzed. Of all the students completing this section 49% demonstrated proficiency, 22% demonstrated a basic understanding of the concept and 29% lacked conceptual understanding (See figure 3). In essence this assignment showed that most students (71%) had at least a basic understanding of computing technology (file management, communication and information gathering).

Figure 3: Basic Use and Understanding of Computing Technology



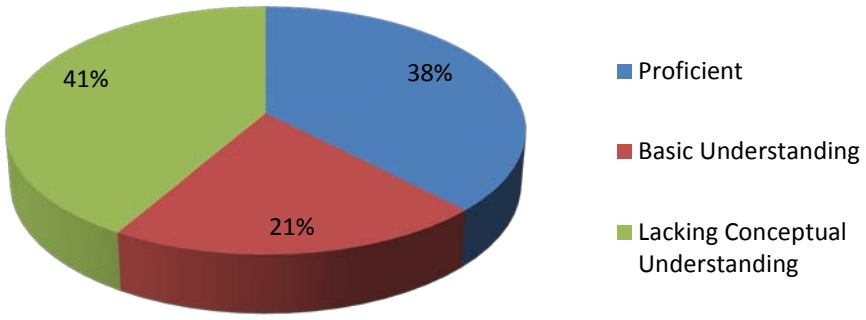
For the second critical step towards the understanding of Computing Technology, proficiency in the three base areas, word processing, spreadsheet and database management ranged from 51% (67 students) to 39% (50 students). As students progressed from word processing, to spread sheets and finally to database management culminating assignments their proficiency fell. Figure 4 shows that most students (67 students out of 130) where proficient at using word processing software, however, for spreadsheet (56 out of 130 students) and data base management (50 out of 130) software this was not the case. When combined most student had at least a basic understanding of word processing (68%) and spreadsheets (52%), while the inverse was true for database mastery, with 61% displaying a basic or lack of understanding.

Figure 4: Number of students displaying Various Levels of Understanding on Culminating Assignments



How well a student did at the application and use of word processing, spreadsheet and database management assignments seems to have affected their ability in the third step of being able to integrate the three. Integration of these three facets measured the student's ability to problem solve and apply the software covered in the class to a real-world scenario. Proficiency obtained in the final assignment declined as only 38% (49) of the students' demonstrated proficiency while 41% (54) lacked a conceptual understanding of the assignment (See figure 5).

Figure 5: Integrative Final Assignment



Conclusion & Discussion

The results from this class show that non-STEM majors benefit from an introductory level computer course that is redesigned and structured in a way to provide the basic steps to becoming technologically literate. The first step in becoming technologically literate is computing competency. Skill areas for computing competency are – computer use and file management, word processing, spreadsheets, databases, presentations, and information and communications (Gonzales & Renshaw, 2005). While students demonstrate a common knowledge of computing technologies, they lack a basic and applied knowledge and use of these systems. This study reveals that there still is a need for these types of classes and in an effort to prepare students for their immersion in a field of work that is constantly evolving by the integrated use of technology in the workspace.

Integrative technical know-how is an important asset that employees of the future need to possess in a period of time where private data could easily become public information. Having a conceptual understanding of how word-processing, spreadsheets and databases can all be integrated will lead them to improve productivity in their various fields of employment in the future. Issues such as security and privacy, which are top priorities for companies nationwide, become easily broached topics with workers that understand the basic implications of their actions on computing infrastructure. Simply training individuals who are based in the STEM field to be technically literate will not help employers in the future overcome the implications of poor security and privacy. As we enter the age of cloud computing anyone who interacts with a computer must understand these implications and that is why a focus on introductory level computing courses needs to be revisited.

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Virtual Learning Strategies for Lost Instructional Time

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Abstract
The purpose of this article is to explore Indiana's state and local policies; challenges and issues; and best practices in the use of virtual learning days for lost instructional days. The Indiana Department of Education permits school districts to use virtual learning days as alternatives to make-up days for lost instructional time due to inclement weather. A case study methodology was utilized to investigate the policies and procedures public schools in the state of Indiana adopted in order to offer virtual learning days. In many areas of the United States, inclement weather such as snow, ice, and extreme cold have been the source of lost instructional days for many school districts. In order to meet state educational guidelines, school districts typically require students to makeup the lost instructional days at other times. This could consist of days built into the school calendar for such events or days added to the end of the academic year. A growing trend among states is to allow school districts the use of virtual learning days when weather would have resulted in lost instructional days.

Introduction

The threat of school cancellations caused by inclement weather has prompted school districts to explore the efficacy of virtual learning, or eLearning, days as a strategy for recovering lost instructional time. The debate on whether to adopt an eLearning strategy has centered on the efficacy, perceptions, and implementation requirements involved with distance education. There are challenges faced by a number of organizations when adopting eLearning technologies. The challenges faced by schools must be addressed while taking into account state guidelines regarding the use of eLearning.

The process of developing an eLearning day strategy will be addressed by examining the policies set forth by the Indiana Department of Education. Indiana's virtual learning day option allows school districts to use eLearning to recover lost instructional time. A number of school districts are considering such a strategy or are actively adopting a policy of eLearning days. There are a number of success factors, such as technology, perceptions, and State-mandated policy constraints; these all can contribute to the success or failure of eLearning strategies. The broader impact of this paper is to assist administrators and educators with tailoring their eLearning strategies for maximum effectiveness.

Efficacy of Virtual Learning

Grades

When considering the use of virtual learning, there can be concerns as to the educational effectiveness of virtual learning strategies. Comparative studies have found that students engaged in online learning showed no significant differences in grade point averages when compared to students in the classroom (Barbour 2011; Crocker 2007; Sheppard 2009).

Crocker (2007) found a slight increase in performance in favor of those in distance learning. It was also determined that students who participated in distance education early in their schooling went on to have less trouble with online education in their first year of higher education.

These findings point toward the fact that online learning is just as effective a tool as traditional classrooms learning. Given this, the use of virtual options for makeup days is viable. The benefits of exposing students to new ways of learning are apparent.

Student Interaction

Davis and Graff (2005) showed a correlation between student interaction in an online media and grades. Essentially, if a student accesses discussion and collaboration resources more regularly, they are likely to do well in the area. The inverse was also found to be true, students who failed to access these areas regularly suffered in their grades. This can be applied to eLearning days, showing that as long as students participate; there should be little difference in their grades versus traditional class sessions.

Online Learning Acclimation

Crux Research (2013) surveyed the opinions of 1,528 college students between the ages of 18 to 34 who are taking at least one on-campus course. The researchers found that 45% of these students are taking at least one online course. This number is up from 23% over the last 5 years. By exposing students to online lessons early, such as eLearning days, they can establish some basics of online learning that would help them to adapt to a very likely future of taking online classes in higher education.

Student Support

In a recent study of student satisfaction with online education (Lee et al. 2011), research was conducted on the relationship between students perceived support levels, their course satisfaction, and learning outcomes in the online learning area. The perceived support consisted of instructional support, peer support, and technological support. The results of this study showed a relationship between students perceived support and overall course satisfaction. The study also showed a loose relationship between satisfaction and final grades.

Additionally, students who participated were also asked a series of open-ended questions and three major trends were developed from their responses. Students had a higher level of perceived support as interaction with their teachers and peers increased. Students also felt more support when they were able to apply what they were learning online to other classes. Finally, the fact that a stated goal of the course was to support their self-directed learning made the students feel more supported. This research demonstrates that tailoring online classes to be more accessible and supportive to the students can positively impact student satisfaction.

Virtual Learning Resources

eBooks

An analysis of electronic books (eBooks) compared to traditional printed text books was done in order to see the effects on K-12 students learning (Huang et al. 2012). This study focused on the use of multimedia eBooks and their effectiveness at promoting learning amongst the group. The sample group consisted of 166 Chinese students from grades 1-6. These students were exposed to both types of media and asked to rate their experience. The findings of this study show that there was little difference in effectiveness between traditional print and eBooks, however the use of eBooks allows for greater tracking and customization tailored to that student, which may provide a better, more personalized learning environment for that student. The results of this study show that online books are just as effective as their traditional paper alternatives.

Learning Management Systems

Learning management systems (LMS) are web-based systems in which schools can create electronic learning (eLearning) environments for courses. For a given course, these systems can incorporate student enrollment, file submission, test builders, communication tools, grading, and progress tracking (Kumar, Gaurav and Suneja 2011). It is through these systems that school districts can create eLearning environments that will be used during virtual learning days.

Some instructors will use an LMS simply as a repository for course documents (Blin and Munro 2008; Selwyn 2007; Lonn and Teasley 2009). This, however, is not the promise of learning management systems. An LMS allows the students who participate the ability to communicate with their instructors, as well as fellow students, from one central area. Through the use of chat rooms, wikis, blogs, and other discussion tools that are inherent in many LMS strategies, it is possible to move the focus of eLearning from simple transmission of knowledge to constructive, participation based learning (Lonn and Teasley 2009). Mijatovic et al. (2013) found that students' interactive use of LMS courses is a predictor of the students' overall achievements in said course, which lends itself strongly to the proper utilization of LMS participation and discussion tools.

Lonn and Teasley (2009) went further in the study of students' use of these LMS strategies, through a fairly large and comprehensive survey. Their findings showed that the main perks for both students and instructors were largely in the realm of

communication and efficiency. This is somewhat unfortunate, considering the possibilities that these active participation tools bring to the area of eLearning. This disparity can be remedied through the clever intervention of instructors, who might lay out various scaffolds and prompts in the active participation tools to get students more involved (Dougiamas and Taylor 2003). Their findings did, however, point toward the idea that students and instructors tend to undervalue the interactive discussion tools, and overvalue the communication management tools (content sharing, announcements, file submission, etc.), which, stated earlier, is the real promising aspect of LMS use for students.

There are many LMS strategies available such as: Blackboard, ANGEL, MyBigCampus, and Moodle. While this is a small selection of all of the LMS strategies, they are some of the more commonly used examples in Indiana. Blackboard is one LMS often used in higher education. Moodle and MyBigCampus are more prevalent in the public schools, given the fact that Moodle is open source and MyBigCampus is more tailored to K-12 specifically. Each LMS is customizable to the desired learning environment and supports the expected features such as assessments, discussion boards, and attendance tracking.

eLearning Technology Adoption

The adoption of eLearning technologies in the K-12 sector is an increasing trend (McKay, Seward, and Davison 2014). While there are a number of barriers such as security, cost, infrastructure capability and management, it is likely that this trend will increase in frequency. A concomitant outcome of this phenomenon is the increased availability of devices to support virtual learning days.

Indiana places a significant value on eLearning technologies. The state, through the Indiana Department of Education (IDOE), has created an office of eLearning. This office provides assistance to school districts in the form of grants, collaborative resources, and online communities. The IDOE maintains a map of 1:1 initiatives throughout the state that indicates a significant eLearning adoption rate among the districts: http://www.doe.in.gov/elearning/11-map.

With the emphasis on eLearning technologies and virtual learning days, there are associated challenges. A particularly troublesome issue encountered by school districts adopting a 1:1 initiative is the appropriate utilization and accountability of technology by a population of minors. Theft, loss, improper usage (e.g., cheating, cyberbullying), are all notable issues faced by school districts (McKay, Seward, and Davison 2014). Rodríguez et al. (2013) further elaborate on the specific shortcomings of mobile devices such as smart phones that have less developed security mechanisms and are more susceptible to hacking.

To mitigate these challenges, the research suggests that school districts adopt a comprehensive Acceptable/Responsible Use Policy (A/RUP) and agreed upon by all (Davison et al. 2014). The policy should explicitly state responsibilities and expectations

for all involved parties: students, parents, and school district. The policy should be comprehensive in that technical support details and security matters are addressed. Additionally, expectations of student behavior should be clearly stated as well as mechanisms for enforcement (e.g., loss of device privileges). Parents and students should sign off on the A/RUP policy prior to the eLearning device being issued during the 1:1 device rollout.

Indiana State Policy on Virtual Learning Days

States differ in policies concerning the use of virtual learning as a method for recovering lost instructional days. Indiana is one state that is embracing the use of eLearning to allow for more flexibility regarding making up lost days due to inclement weather. State policy in Indiana indicates that school districts have three options for making up lost instructional days due to inclement weather: non-waiver, conditional waiver, and virtual learning.

The non-waiver option is the traditional approach to addressing school closures due to inclement weather. This option can be exercised in two ways. School districts can incorporate snow days into the school calendar where the schools will be closed on a stated day unless it is needed to recover lost instructional time caused by a school closure. The second alternative is for a district to add school days on Saturdays or after the conclusion of the established school calendar.

The conditional waiver option recovers the lost instructional time by increasing the length of the school day for a series of days until the lost instructional time is recovered. In Indiana, state policy states that a full school day for students in grades 1-6 must contain five hours of instructional time. The number of hours increases to seven for students in grades 7 - 12. With that requirement a school district can choose how long they will extend the school day and for how many days. For example, a school district may choose to extend the school day by 1 hour per day for six days to make up one day of lost instructional time.

The newest alternative is the virtual learning option. One use of this option allows school districts to utilize eLearning opportunities in lieu of in-class instructional days. Where this differs from the non-waiver and conditional waiver options is that it is not restricted to lost instructional days due to inclement weather. State policy also allows school districts to have planned virtual learning days scheduled into the school calendar. These are days built into the schedule on which students and teachers know in advance that the instruction will occur in a virtual environment and not in the classroom. It should be noted, however, that the IDOE does not allow these planned virtual learning days be used to compensate for lost days due to inclement weather.

The virtual learning option can also be used to recover lost instructional time for days when school is cancelled. When this option is exercised, the school district must determine whether the virtual learning day will occur on the day of the school

cancellation or on a planned makeup date. This gives the districts a large amount of autonomy regarding how they choose to handle the problem.

This option differs from the non-waiver and conditional waiver options in that it can be used for more than just instructional days lost due to inclement weather. School districts also have the option to incorporate virtual learning days into their normal school calendar. Exercising this option provides teachers and students the opportunity to acclimate to teaching and learning in a virtual environment.

School districts must receive approval from the IDOE before they can take advantage of the virtual learning option. School districts must provide a plan that addresses the following criteria:

- The district can demonstrate that students and teachers have to access the Internet away from the school buildings.
- All the teachers and students have access to, and experience using, online platforms for delivering learning.
- A procedure for notifying students of their learning targets for the day by 9:00 AM.
- Teachers will be directly reachable by students and parents to facilitate and support instruction.
- Student work will cover content that would have been addressed if school were in session.
- All students who have accommodations for instruction will be provided with or have access to those accommodations.
- For students with disabilities who do not use online platforms for learning or for those students whom online platforms are not appropriate, teachers will provide parents/caregivers with appropriate educational materials and learning activities for student use.
- For limited English proficient students, teachers will provide parents/caregivers with appropriate educational materials and learning activities for students use per the Individual Learning Plan.

Models of School District Adoption

For the academic year 2014-2015, there were over 50 school districts that received permission to use the virtual learning option. What will follow is a review of how these school districts satisfied the application criteria.

Scheduling of Virtual Learning Days

Before addressing the criteria indicated in the virtual learning option application, school districts had to determine whether they were going to have the virtual learning day on the day of the school closure due to weather, or to have planned virtual learning makeup days. Each option presents its own challenges.

Of the two, conducting virtual learning days on the actual snow day has more logistical complications. The state of Indiana requires that all services offered on a regular school day must also be available on a virtual learning day. This could include services for special needs students; occupational, physical, or speech therapy provided by the school district; to breakfast and lunches for any student. Offering these services in the midst of a blizzard would place students, teachers, and staff alike in harm's way.

The alternative is to offer the virtual learning days on a scheduled makeup day. This could be done by offering the virtual learning on a Saturday after the snow day. Another alternative is to schedule virtual learning days into the school calendar. This is the same strategy as built-in snow days where students attend classes on a scheduled holiday if there is a snow day that needs to be made up. With this approach, a school district can make arrangements for individualized services required by the students. Using scheduled virtual learning days also affords school districts an opportunity to develop solutions that address the criteria mandated by the IDOE for virtual learning days.

IDOE Criteria for Virtual Learning Days

Internet Access

For virtual learning days to work, both students and teachers need to have Internet access. Many of the school districts have conducted surveys to determine the number of students who have Internet access outside of school. The Frontier School Corporation (2014) found that 87% percent of their students had Internet access and computers at home. Among those, 85% had WiFi and 92% had a desktop or laptop computer. Most school districts, however, did not state the type of access their students have to the Internet. The connection speed and type of device used to access the Internet has a direct impact on the viability of the device as an educational tool. Students that only have smartphones with Internet access may not have the bandwidth and computing capabilities needed to complete the virtual learning day assignments effectively.

To satisfy a state mandate, school districts have to address students with limited or no Internet access out of school. Many school districts open the doors to the school to allow students to use the Internet. Some schools staff a supervised computer lab to do this. Other schools require students to bring their own device and to also provide their own adult supervision. In this case, the district is only providing the students with access to WiFi in the schools.

Another option that districts are choosing is to provide families with a list of public locations where students can use public computers or access free WiFi. Locations for public computer labs include places such as public libraries and community centers. To access free WiFi, school districts recommended that students take advantage of WiFi offered in many fast food restaurants. The issue with this approach is that the weather conditions that caused the school cancellation are likely to prevent students from taking advantage of these recommendations.

There are two prevailing strategies for addressing this concern. Both strategies are dependent upon teachers preparing materials in anticipation of a school cancellation. The first strategy is used by school districts that have implemented a 1-1 initiative that allows students to take their school issued laptop or tablet home. Garrett-Keyser-Butler Community School District (2014), Frontier School Corporation (2014), and Scott County School District 2 (2015) have all indicated that students have the opportunity to download the assignments and activities to their devices at school on the day prior to an anticipated school closure. The expectation is that these students would then submit their assignments after their return to the classroom.

Other school districts offer students without Internet access at home the opportunity to pick up packets of printed materials to take home when a school closure is expected (Logansport Community School Corporation 2014). The Penn-Harris-Madison School Corporation (2015) refers to these packets as Blizzard Folders.

Experience with Online Learning Platforms

The state asks that schools districts provide evidence that both students and teachers are versed in the use of online learning platforms. The intent of this criterion appears to be an expectation that teachers will receive adequate training to create educationally meaningful online learning experiences. At the same time, students need to be familiar with the systems employed by the teachers before the virtual learning day occurs.

School districts are addressing this requirement through their LMS strategies. They indicate systems such as MyBigCampus, Moodle, Google Docs, and Google Classroom are already being used in the classroom. It is through these systems, which students and teachers are already familiar, that virtual learning day assignments will be made available.

These solutions, however, are not an indication that the teachers are prepared for online teaching. Most of these learning management systems are used primarily for document storage (Blin and Munro 2008; Lonn and Teasley 2009; Selwyn 2007). Directing students to these locations to access assignments does not mean that they are receiving any instruction. School districts need to provide teachers with training regarding how to create an online learning environment that provides students with the resources to independently create knowledge. If this is done, the day after the virtual learning day is an opportunity for the students to share with and learn from other students.

Student Notification

When a school district has a virtual learning day, students must be made aware of what is expected of them. The guidelines state that this must occur by 9:00 AM of the virtual learning day. School districts are utilizing a variety of tools to satisfy this requirement. Some school districts have indicated that virtual learning day assignments will be posted on a teacher's webpage (Southeastern School Corporation 2014). Students in grades 7-12

in the Tri County School Corporation (2014) will receive their virtual learning day assignments via their school e-mail accounts. The parents of students in grades K–6 must access their children's assignments through a link on the school district's website.

Some school districts (Frontier School Corporation 2014) have adopted the SchoolReach system that allows issuance of mass notifications across a variety of communication paths. School districts that participate in the SchoolReach system can notify parents, students, and teachers of school closures through mass voice phone calls, text messages, e-mails, or social media postings (SchoolReach 2014). To receive these notifications, students and parents have to register their phone numbers with the SchoolReach service.

The Northwestern Consolidated Schools of Shelby County (2014) has taken a slightly different approach. Teachers are required to prepare a series of 5 eLearning bundles, each containing a set of eLearning assignments. In the event of a school cancellation, the district will utilize their notification system to inform parents and students of the cancellation and which bundle in the series students should complete.

Instructional Requirements

The intent of the virtual learning option is to provide an alternate method for students to receive instruction. It is this instructional requirement that is key to the next two criterion set forth by the IDOE. A mechanism must be in place for students to receive instruction on the virtual learning assignments.

The first requirement is that teachers will be available to provide students with instruction during a virtual learning day. To this end, school districts are requiring their teachers to be available for students or parents for a specific timeframe on the virtual learning day (Frontier School Corporation 2014; Logansport Community School Corporation 2014; Northwestern Consolidated Schools of Shelby County 2014; Southeastern School Corporation 2014). Students and parents are typically able to communicate with teachers through e-mail during the virtual office hours.

While the first aspect of the instructional requirement pertained to teacher availability, the second addresses the instructional content required of students on a virtual learning day. Teachers are required to provide students with work that addresses the content that would have been delivered in class had school been in session. The IDOE does not want teachers to give students work that is intended simply to keep them busy for the expected 5 or 6 hours. The learning opportunities provided students on virtual learning day is to be an extension of what they would receive in class. The Garrett-Keyser-Butler Community School District (2014) has stated that the work their teachers provide students "will be a continuation of the learning they would typically do if they were in the building" (para. 2).

Addressing Special Accommodations

A concern with virtual learning days is its instructional efficacy for students with special needs or who require special accommodations. Not every student will have the developmental, cognitive, or behavioral capabilities to engage in virtual learning activities. Students may have early intervention programs (EIP), individualized learning plans (ILP), or plans required by Section 504 of the Rehabilitation Act. Each of these programs or plans is designed to provide a student with educational opportunities tailored to their individual capabilities or needs.

There is an IDOE criterion stating that school districts need to provide a plan to meet the instructional needs of these students. The school districts with posted information have simply stated that these issues will be addressed. The lack of specifics is to be expected. The individuality of these plans and confidentiality requirements prevents school districts from providing too much information other than the promise that they will exercise due diligence in meeting the needs of these students on virtual learning days.

Attendance

In the state of Indiana, students are required to receive a minimum of 180 days of instruction. School districts choosing the virtual learning option must provide evidence that students are educationally engaged for five hours (grades 1-6) or six hours (grades 7-12) for a virtual learning day to be counted toward the state requirement.

School districts are utilizing their LMS as the primary method for documenting student engagement on virtual learning days. These systems will log and timestamp the activities of the students as they are engaged in the learning management system. With this, teachers can note when students initially log in to access their assignments. It can also track when students submit their work for the day.

Conclusions

School districts across Indiana have adopted a variety of strategies to address the virtual learning day requirements set forth by the IDOE. School districts are leveraging their existing investments in LMS strategies. These systems were originally used by school districts to provide teachers with a resource of digital repositories for course management. It is through technologies that virtual learnings days are implemented. These LMS strategies are capable of providing teachers with the capability to provide learning resources in an online format.

The challenges associated with adopting a virtual learning day approach have less to do with technology and more to do with pedagogy. State policy indicates virtual learning days should provide students with instruction and address the materials that would have been covered if school had been in session. There are no requirements that teachers receive training in online pedagogy. School districts should provide teachers with faculty development in this area to ensure that students receive the quality instruction that is expected.

Almost all of the school districts reviewed received approval to use the virtual learning option for the first time during the 2014 - 2015 academic year. At the time of this study, school districts had not had the opportunity to collect and analyze data to determine the effectiveness of their virtual learning plans or the impact of the virtual learning days on student learning outcomes. Future research should explore each of these areas to provide teachers and administrators with the information needed to create positive virtual learning experiences.

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Construction Laborer and Helper Career Path Exploration

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Introduction

The purpose of this manuscript is to provide career and technical education students who are considering a career in the construction industry, with factual details regarding a career as a construction laborer and helper. Before considering a career as a construction laborer and helper, it would be prudent for career and technical education students to review specific details described in this manuscript to help develop a better understanding regarding what this specific career might be like. The following details regarding construction laborers and helpers will be presented: responsibilities, how to gain employment in this career, pay and benefits, and job outlook.

Responsibilities of Construction Laborers and Helpers

Construction laborers and helpers work on construction sites and assist with debris removal and site preparation. They are involved with moving building supplies from transport vehicles to the site. Assembly of scaffolding or braces to be used in the construction project is another responsibility. The job can be very physical, such as excavating a trench (See Figure 1.), filling holes, or compacting ground material in preparation for the building project. Construction laborers and helpers often maintain and operate machines and equipment used on the job site. They often work alongside trade specialists and assist them with their jobs. Following directions from individuals in a supervisory capacity and being able to read plans for a construction project is also important (U.S. Department of Labor, 2015).

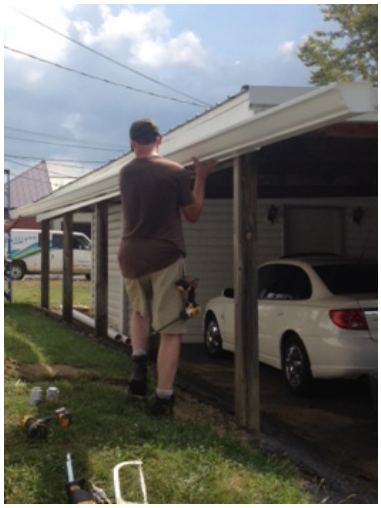
Figure 1. A trench that excavated by a construction laborer and helper.

Construction laborers and helpers stay busy during the entire construction project. One reason for this is because a main task for someone functioning in this job is to make sure the site is prepared and clean. Many individuals functioning in this job will perform general tasks such as placing cones, installing traffic markings, and setting up barricades. It is possible to specialize in one particular are such as operating equipment and machinery to install solid concrete or asphalt surfaces (U.S. Department of Labor, 2015).

Construction laborers will utilize basic tools, such as shovels and brooms. Using more advanced equipment such as a jackhammer, tamper, or pavement breaker is also common. After completing training, construction laborers may assist with operating boring machines, transporting explosive materials, placing pipes with laser guided equipment, or operating robotically controlled equipment to cut material. Earning certifications to something that is possible, and these certifications are needed to remove lead, asbestos, or chemicals during a construction project (U.S. Department of Labor, 2015).

Construction helpers support tradespeople with their tasks (See Figure 2.). These trades specialties may include brickmason, blockmason, stonemason, carpenter, electrician, painter, construction and maintenance, plumber, pipefitter, steamfitter, roofer, tile and marble setter. A construction helper may engage in a variety of jobs as part of this support role, such as transporting materials and tools or preparing equipment. Helping to disassemble equipment, cleaning up a work site, and trash disposal are typical responsibilities (U.S. Department of Labor, 2015).

Figure 2. A construction laborer and helper assisting with an installation.



Becoming a Construction Laborer or Helper
Taking high school courses in mathematics, English, welding, blueprint reading, or shop is recommended; however, there are no education requirements. Many who enter this career field will work towards obtaining further training via vocational programs, trade schools, or community colleges. Once hired by an employer, most construction laborers and helpers are trained on the job. By working with more experienced employees, learning will occur (U.S. Department of Labor, 2015).

The Laborers' International Union of North America (LIUNA) has a training arm called the LIUNA Training and Education Fund. This training arm is involved with developing coursework, providing education for trainers, and supporting 70 centers that provide training throughout the United States and Canada. Construction craft laborers can learn the skills needed. They offer courses in aboveground drilling, asphalt, bridge construction, renovation, and demolition, concrete, construction math, employability skills, general construction, green construction, hoisting & rigging, ICRA, line and grade, mason tending, pipelaying, pipeline, and scaffold building (LIUNA Training & Education Fund, 2015).

For construction laborers who intend to be involved with the abatement of hazardous materials, they must obtain a hazmat license, which is federally regulated. There are many construction related areas that require certifications, which include asbestos removal, energy auditing, lead abatement, OSHA 10 and/or 30 hour construction safety certification, pipeline operation, radiological work, rough terrain forklift operation, scaffold use and building, signaling, weatherization, welding, and work zone safety (U.S. Department of Labor, 2015).

Pay and Benefits for a Construction Laborer or Helper
The U.S. Department of Labor (2015) provides wage information as of May 2012 for construction laborers and helpers. The median annual pay in 2012 was specified as $29,160. For those in the lowest ten percent, the salary was specified as $18,840; however, those in the top ten percent had a specified salary of $55,750. It is important to note that when construction laborers and helpers are separated, construction laborers alone have a reported median annual salary in 2012 of $29,990 as compared to construction helpers with a reported median annual salary in 2012 of $26,570. Salary.com (2015) reports the median annual salary for general laborer as $27,063 or an hourly wage of $13.00 per hour. This source identifies that there are other benefits which include disability insurance, healthcare insurance, bonuses, 401k/403B, pension, and time off. This can elevate the total compensation from $27,063 to $42,228 annually.

Job Outlook for Construction Laborers and Helpers
The U.S. Department of Labor (2015) specifies job outlook information current as of 2012 for construction laborers and helpers. The total number of jobs in 2012 was reported as 1,284,600. During the period spanning 2012-2022, a 25% growth is expected. Therefore, an additional 325,200 jobs are expected to be added. This is faster

than the average when compared to all occupations. It is important to note that employment growth can often be influenced by economic events, such as those that occurred during the 2007-2009 timeframe. U.S. News & World Report Money (2015) reports that "Employment for general construction workers is expected to swell this decade" (Para. 3). It is also interesting to note that this source indicates "Working as a general construction worker is an excellent introduction and gateway to other specialties within construction" (Para. 6).

Conclusion

For those who are interested in working in the construction industry right out of high school, entering into a career as a construction laborer and helper may be worth considering. Given there is a good expected job growth, it appears as though this career will be stable for the foreseeable future. As with all careers, carefully consider the pay and benefits as well as the working conditions prior to making a career decision. It may be prudent to also seek out opportunities to speak with individuals in this industry to gain a real world perspective.

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Classroom Management Strategies

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Introduction

This discussion will help new teachers be successful teachers. Effective teaching requires considerable skills in managing tasks and situations occurring in the classroom each day. Classroom management involves a variety of skills and techniques teachers can use to keep students organized, active attentive, and productive in class. When classroom management strategies are executed effectively, teachers minimize behaviors that impair learning for both individual and groups of students. Effective teachers tend to display strong classroom management skills, while the hallmark of an inexperienced or a less effective teacher is a less organized classroom with students less attentive and engaged. This work discusses the best practice theories from Wong & Wong's "First Days of School", Canter's "Assertive Discipline" and Redl & Wattenberg's "Group Dynamics". The article focuses on differences between rules and procedures, what to do before the class, what to do on the first day of class, ways to build relationships with students, the art of questioning, the significance of staying calm, and the importance of positive expectations.

Literature Review

It is important to understand and value the concept of classroom management and to master a wide variety of instructional and organizational strategies to ensure a valuable learning environment. Effective classroom management can be enhanced by ideas, helpful considerations, hints, and suggestions from experienced educators. Effective classroom management also requires an understanding of group dynamics and educational psychology concepts. Peer pressure can have a significant impact on a learning environment. Well-developed classroom procedures and rules, understanding students with special needs, and discipline plans are key ingredients for effective classroom management. Reviewing each of these models will help effectively address many common concerns. It is essential to understand different personality types among students and the strategies that help manage a classroom. It is important to acknowledge that many "unique" situations may not be unique and that others have already developed effective methods for addressing these situations.

Lee and Marlene Canter have made several major contributions to the concept of classroom discipline. They focused on "the concept of rights in the classroom – the rights of students to have teachers help them learn in a calm, safe environment and the rights of teachers to teach without disruption" (Charles, 1994, p. 38). For many years the Canters

have been refining their "Assertive Discipline" system. "Assertive discipline is a structured, systematic approach designed to assist educators in running an organized, teacher-in-charge classroom environment" (Charles, 1994, p.42). Research by Canter and Canter (2009) found that many teachers were not able to manage the unpleasant behavior that occurred in their classrooms, when consulting for school systems. The Cantors identified areas to consider for improvement. The main deficit was a lack of teacher training regarding behavior management. Based on their investigation into assertiveness training and applied behavior analysis, "they developed a common sense, easy-to-learn approach to help teachers positively influence classroom learning through leadership" (Canter, p.43, 2009). Today, it is a widely used "commercial" behavior management program. Assertive discipline has evolved since 1970s from a rather authoritarian approach to one that is now more participative.

The Cantors suggest students have a need for and the right to a warm, supportive classroom environment, where teachers strive to help students succeed. They believe teachers have the right to identify what is best for students, and to expect adherence. No students should interfere with teaching or student learning. Student adherence is necessary for creating and maintaining an effective and efficient learning environment. To reach this goal, teachers should react confidently, as opposed to aggressively or non-assertively.

Effective teachers react confidently and immediately to manage student's behavior. To manage the classroom a few clearly stated classroom rules that have been explained, practiced, and enforced consistently will help avoid student misbehavior. Teachers give clear directions to students who need of guidance for proper behavior. Students who disobey rules and directions receive negative consequences (Canters, 2009).

"Assertive teachers clearly, and consistently model and express class expectations and they work hard to build trust. Assertive teachers believe that a firm, teacher-in-charge classroom is in the best interest of students. They believe that the students wish to have the personal and psychological safety experienced when their teacher is highly competent in directing behavior" (Canter, 2009). The Canters suggest society demands appropriate behavior to be accepted and successful and that no one benefits when a student is allowed to misbehave. The Canters suggest that teachers show their concern by demanding and promoting appropriate classroom behavior (Canters, 2009).

There are five steps of Assertive Discipline to help recognize and remove roadblocks to assertive discipline. Teachers should avoid negative expectations about students. Often teachers fail to recognize the value of positive and assertive reinforcements in extreme discipline or motivation cases. Many new teachers perceive that they operate alone and with no support mechanism. A second step is to practice assertive response styles which minimize opportunities for confrontation. Teachers should not create hostile environments while being assertive. A third step is to set limits. It is important to request appropriate behavior, deliver the verbal limit, and use a broken-record technique. A

fourth step is to always follow through with all established consequences. It is important to set appropriate consequences beforehand, always apply them and practice verbal confrontations that call for follow through. A final step is to implement a system of positive consequences such as personal attention, positive notes to parents, special awards, and special privileges.

Many professionals entering into CTE education based on work experience often do not trust the ideas of others, especially those no longer in secondary classrooms. This can be a very dangerous approach to education. All teachers, even the most effective, can learn valuable ideas and strategies from other experienced teachers. Research into best practices often suggests that teachers benefit from help from other educators, administration, and parents.

According to Lubbers and Martin, who wrote a white paper on the R & W model of group dynamics, Redl and Wattenberg promote the concept of Group Dynamics. “If we can reduce the occurrence of behavior inimical to work involvement there will be less need for the teacher to spend time on behavior modifications, understanding individual and group behaviors and have more time and energy available to plan a less and directly help students with their studies” (Lubbers & Martin, 2015). Like Redl, Wattenberg also took a vested interest in understanding delinquents and the nature behind the individual. It was this interest that encouraged both Redl and Wattenberg to work together to develop the model for dealing with groups (Lubbers & Martin, 2015).

The main focus of this study describes the difference between group and individual behaviors. Teachers can learn to use influence techniques to deal with undesirable aspects of group behavior. There are influential techniques a teacher can utilize to maintain group control. Self-control is a useful technique that addresses situations before they become serious. Examples of this technique include direct eye contact, moving closer, humor (but not sarcasm), etc. These are examples of teachers who maintain "withitness" (Lubbers & Martin, 2015).

Rules vs. Procedures

Herry Wong says “the function of a rule is to prevent or encourage behavior through the use of consequences for good or poor behaviors” (Wong, 2009, p. 34). Rules normally have clearly defined consequences for undesired behaviors. For instance: "keep your hands to yourself" with a consequence of timeout or time in the school office. While a “procedure is simply method or a process for how things are to be done in the classroom” (Wong, 2009). They just result in success or lack or lack of success if a procedure is not followed. Procedures have no negative consequences based on outcomes. Examples of a procedure are at the cleanup bell and homework collection.

Cleanup bell procedure:

1. Put away all materials.
2. Clean-up work area.

3. Wait quietly to be excused

Homework collection procedure:
1. Turn in homework before class starts.
2. Put homework inside blue folder.
3. Pass homework to the front of the classroom.

The major difference between a rule and procedure is rules control student behavior and procedures outline the process which will become routine. Rules require consequences but procedures never have consequences other than not successfully completing a task. Rules address undesirable behaviors but procedures just describe how to complete a task.

A procedure is a set of steps for completing a task. There are many procedures a teacher can introduce to improve classroom operations. Use of many procedures can free significant teacher instructional time by reducing discipline issues and questions about what, when, and how to do routine tasks. Classrooms not using procedures are often easy to recognize, they appear to have the least teacher control, students unengaged, or students asking repeated questions about simple tasks. It is important to understand that not successfully completing a procedure should not receive a negative "behavioral" consequence (e.g. detention, etc.). Students should know that procedures are designed to help them to successfully complete a task. They just review and repeat the procedure until they succeed.

There are nearly limitless opportunities for useful procedures. For example: "Formatting papers", "Using the restroom", "Submitting assignments or tests", "Cleaning workstations", "Dismissing class", or "Asking questions". Safety is a topic for which procedures are especially useful.

Procedures should be gradually introduced to students. It is most useful to introduce new procedures as they are needed over an entire year and not at one time. Don't introduce a new procedure in September that will not be used until February. This way, students may learn dozens, even hundreds of procedures over a full school year without being overwhelmed. Procedures should be for single small tasks and not combinations of tasks. It is important to keep the procedure steps simple and easy. With long and complex procedures, the training time may increase exponentially, if they can be mastered at all.

Each procedure normally requires practice, eventually becoming routines. When a procedure becomes a routine, students will follow it automatically and without direction. Turning a procedure into a routine is an ultimate goal because it can free up class time for a teacher and make the teaching process more efficient. Students may question the need for a procedure when it is introduced, because it is new, but will often stop challenging as they become routine.

Before the class

Prepare an outline for the first day of the school. As a new teacher, one will probably be as nervous as students, Wong & Wong recommend using a written script for the first day of class (Wong, 2009). However, it might be a better option to use a written outline instead of a script. If a full script is used teachers tend to read word for word from the script, which can be distracting, reducing student interest or attentiveness. An outline only requires a glance to determine the next content to present. A teacher should rehearse a presentation but not memorize word for word. A teacher should sound natural and not too rehearsed, vary the tone of the voice, and avoid overusing any particular words or phrases.

A lengthy presentation often is a daunting task even for experienced teachers or students. There are different mnemonic techniques that can ease remembering a presentation in a more effective way. For instance, use of acronyms and acrostics can helpful when remembering words in a specific order. Acronyms are formed by using each first letter in a sequence of words to form a new word. Acrostics are similar to acronyms, but instead of forming a new word, letters are used to form a sentence. Here is an example: "My Dear Aunt Sally". This acrostic is used to remember the mathematical order of operations: Multiply and Divide before you Add and Subtract (Mallan & McLain and Remhof, 2008).

Another technique to remember a lengthy presentation is called Method of Loci. Loci is a plural for location (Hodges, 1982). To use this method, think of a path taken regularly like from a parking lot to a classroom. The key is the path has to be familiar enough to easily remember objects along the path. Imagine walking down the path identifying landmarks along the way. Associate these landmarks to points from a class outline, then mentally walk the path relating landmarks to the assigned points.

It is important to plan and outline the daily material taught. It is also critical to fully understand material before introducing it. The first day of class will determine the students' attitude for the rest of the term. If one is not well-prepared and won't engage students in a meaningful manner on the first day of class, it will be very difficult to recover their attention in the subsequent classes (Wong, 2009). Students quickly draw early assumptions that may last for an entire course. As professor Wong suggests: "If you do not structure your classroom, the students will structure the classroom for you" (Wong, 2009, p. 111). Establish an appropriate tone in the classroom early. Having a written outline and engaging content along with being well prepared will help organize one’s thoughts, reduce anxiety, and help set the cornerstone for structuring the class. It is good practice to help students recognize how a course or topic is important and applicable to them at the start, otherwise many will not see the need to participate or pay attention. This is especially effective if they can be shown instead of just told of the importance. Use engaging methods that do not have them passively listening, such as asking many questions or having students demonstrate while teacher directs (Wong, 2009).

It is important to try to memorize student's names. One technique to help facilitate memorizing student's names is the use of assigned seats. On the first day, create a seating chart and have students use the same seats every day. After the chart is drafted with student names, spend some time memorizing the chart. Within a few classes, it will be easier to refer to students by name. Sometimes, though, it may be advisable to separate specific individuals wanting to sit together (close friends are especially effective at distracting each other). A seating chart also helps minimize time wasted taking attendance, which is often a disruptive period. With a chart, at a glance, a teacher can identify who is missing.

First day of class

Wong describes things a new teacher should pay attention to during first days of class and going forward. One item Wong emphasizes is that on the first day of class a teacher must establish procedures that will lead to effective classroom management. Wong provides the following definition: "Classroom management consists of practices and procedures that a teacher uses to maintain an optimum environment in which instruction and learning can occur" (Wong, 2009, p. 167). "Classroom management refers to the wide variety of skills and techniques that teachers use to keep students organized, orderly, focused, attentive, on task, and academically productive during a class" (The Glossary of Education Reform, 2014). Note this definition doesn't suggest effective classroom management requires disciplinary reactions. The classroom should be managed, not disciplined. Disciplining students is a short-term solution. Establishing procedures, on the other hand, yields longer-term positive results.

Wong describes that a teacher must establish control over the classroom, yet control doesn't necessitate punishing or intimidating students. Establishing control means that teacher is intimately aware of his or her professional responsibilities, knows the material, and establishes sound procedures (Wong, 2009). Establishing good procedures leads to consistency. Consistency is what reinforces well-managed classroom. Predictability of events in a classroom leads to low levels of disruptive behavior (Kern & Clemens, 2007; Parsonson, 2012). How does one teach students consistency? Research shows that it takes 8 repetitions for students to learn a new behavior, and 28 repetitions to unlearn an old behavior and replace it with a new one (Hunter, 2004).

Whether it is the first day of class or the hundredth, there is one common denominator to having a successful day: preparation. Teachers should have their classrooms ready, every day. Clutter in a classroom or lack of preparation sends negative signal to students who in turn may respond with disruptive behavior.

Building Relationships with Students

A successful classroom environment cannot be achieved by purely setting rules and creating procedures. An integral part of effective classroom management is to build relationships with students. As Wolk suggests, teachers must "win their students' hearts while getting inside their students' heads" (Wolk, 2003, p.14). Research suggests that

developing relationships with students leads to fewer disruptive behaviors and an increase in academic performance (Decker, Dona & Christenson, 2007; Marzano, Marzano, & Pickering, 2003). Research also shows that decline in student motivation is primarily linked to poor relationships between teacher and students (Furrer & Skinner, 2003). Therefore, it is imperative for a vocational teacher to spend time learning techniques to build successful relationships with students. Contrary to common notion, all students must not be treated the same way. Research shows that using different strategies with different types of students leads to more effective classroom management (Brophy, 1996; Brophy & McCaslin, 1992). A successful teacher often incorporates in their schedule time to meet students one-on-one. The successful relationship building process happens through personal interactions as suggested by Haberman (1995). Kern and Clemens (2007) suggests frequent use of praise, whether verbal or non-verbal, leads to better classroom experiences. Recognizing desired behaviors with positive feedback augments such behaviors. Kern and Clemens (2007) suggest using the ratio of 4 to 1 regarding delivering praise and rebuke. Another strong technique to build effective relationship is the use of empathy. Everyone likes to be heard and appreciated and this is no different for students. The goal of this strategy is make the student feel understood (Beaty-O'Ferrall, Green & Hanna, 2010). It is important to communicate this understanding in such a way that builds empathy, and doesn't steer the student further away from the teacher. Beaty-O'Ferrall, Green & Hanna, provide a great example of dealing with a difficult female student in middle school from which a valuable lesson can be derived. This student shared with the teacher that she had issues at home and it was difficult for her to prepare for class. To that the teacher responded: "Well, you have to get past it, and study anyway". This response distances the student from the teacher as there is little empathy embedded in the response. Beaty-O'Ferral, Green & Hanna recommend a more empathetic response as follows: "It must be difficult for you to study and deal with the issues at home at the same time". Such a response wouldn't alienate the student, and would set a great foundation for further discussion to find ways help the student improve personal performance. Research consistently shows that building relationships will lead to better classroom experiences. When building relationships even small and negligible items matter. For instance, a research conducted by Allday and Pakurar (2007), show that by simply greeting each student by name at the classroom door, teachers were able to significantly reduce disruptive behavior in class.

Sometimes building empathy with difficult students may lead to situations for which a teacher has to acknowledge a negative attitude. It might sound wrong at first, however, it's based on theory called positive phycology (Seligman, 1999). The idea behind this approach is to acknowledge student's skill he or she might have been developing since early childhood and then redirect it in a positive direction.

The Art of Asking Questions

The importance of asking questions cannot be underestimated, especially in a teaching environment. The Socratic Method of inquiry and discussion has been around for a very long time and is proven to be an effective instructional strategy. The reason we ask

questions is to get students involved, help students understand the material, and evaluate whether or not the students comprehended the material. The teacher's goal is to promote lively discussions, having students ponder a particular question from several angles, and teach students how to critically evaluate ideas and conflicting theories. To achieve this goal, teachers should plan their questions beforehand. A successful teacher asks thought-provoking questions that probe the content and stir the interest of the students. Therefore, preparing questions for a particular class should become a part of your normal routine.

To encourage student's interest, consider opening the class with a question that may not be answered until the end of the class. This will encourage students to be engaged throughout the class while trying to discover an answer to a pressing question. Also, ask questions that don't have an answer. These are the questions that are currently being debated within the field or area of study. A question that cannot be answered is generally more interesting than the one that has an easy answer. The goal is to intrigue students and have them brainstorm of possible answers.

Avoid asking "Yes or No" questions as these questions do not provide a foundation for a lively discussion. Instead ask open-ended questions. When asking open-ended questions teachers should not expect receiving an exact answer they had initially in mind. Teachers should be flexible with responses and should guide the conversation instead. Otherwise teachers might strengthen the idea that there is only one correct answer, and a student might be discouraged to participate in further discussions.

It is usually more effective to call out a specific student for each question by name. This way a teacher is able to control the level of participation among students and ensure that every student is given a chance to participate in a discussion. When calling out students by name, rotate randomly through the class in a non-predictable manner. This will encourage students to remain more attentive since they can't anticipate when they will be called next.

The Art of Emotional Intelligence

One must not forget that a teacher is also a human and is subject to human inclinations caused by his or her environment and emotional state. Majority of scholars agree that emotional intelligence is equally, if not more, important than other skills to be a successful teacher (Garner, P. & Moses L., 2013; McAllister, Wilson, Green, & Baldwin, 2005). The reason it is important is because individuals who are new to the teaching profession are at high risk to burnout, empathy fatigue and other behavior that might lead to an inadequate emotional response to difficult or stressful situations in a classroom (Chang, 2003; Garner, P. & Moses L. 2013; Garner, 2013).

But what is emotional intelligence? Maguire defines emotional intelligence as follows: "[Emotional intelligence] is a collective group of qualities about a person with certain "character" or "personality". It signifies several qualities including a person's ability to self-regulate one's emotions and feelings, to delay gratification and to motivate oneself. [It] also involves a metacognitive quality where the individual is able to internally

discriminate among other emotions, monitor one's feelings with respect to others and use this self-regulation quality to guide one's thinking and actions" (Garner, P. & Moses L. 2013, p. 423). In another words, an individual is considered to be emotionally intelligent if he or she is capable to control his or her emotions.

There are various ways to find and maintain one's inner balance, from Yoga exercises to various diets. In this article we recommend to build the emotional intelligence with a simple step – when a teacher enters a classroom he or she must leave his or her ego behind the door. Students are quite perceptive as to what irritates a teacher and may take advantage of it. Once a teacher gives in to the turmoil of emotions, teacher's efficiency in a classroom is impaired, or worse, the chaos is imminent (Beaty-O'Ferrall, Green & Hanna, 2010). In addition, there is no room for empathy or relationship building if a teacher is angry, or shows frustration towards a student or the whole classroom. Every individual has weak points which if triggered cause a strong emotional response. A teacher must be able to analyze and identify one's vulnerabilities and be aware of those. When students push those buttons, a teacher must be able to respond strategically using relationship building techniques described in the Building Relationship with Students portion of their recommendations, such as building empathy and admiring negative attitude.

Setting Positive Expectations

According to Wong, expectation is "knowing what you can or cannot achieve" (Wong, 2009, p. 37). Therefore, setting expectations should start with the teacher. Teacher must buy in to the idea that he or she is going to be a great teacher. In addition, teacher must expect that his students will succeed. The research proves the power of positive expectations. For instance, Wong in his book cite the research conducted by Harvard University where teachers in certain classes were fed erroneous data that 20% of their students were special. After the trial period, students who were erroneously identified as special (in reality, these students were picked at random) were tested and showed a significant gain in academic performance compared to their peers.

With that an effective teacher should create a classroom environment in which high and positive expectations are set both for students and for the teacher himself. A teacher must believe that he or she is capable to make a difference in lives of his or her students. One of the best things a teacher can do is to persuade a student that he or she is capable of success.

The goal behind setting high expectations is to motivate students to learn and grow. While there are numerous factors that may impact student's motivation level which are outside of a classroom and are not under the teacher's control, there are some that a teacher can control and should use to his or her advantage in a classroom. For instance, according to Madeline Hunter, to manage students' motivation teachers should make students feel personally important or significant in a classroom, or celebrate students'

efforts. Even small things like moving around the classroom and getting closer to a student who is not quite focused on an assignment yields positive results.

Recommendations

1. Be effective and assertive teacher
2. Apply the organizational strategies
3. Distribute the concept of rights in the classroom
4. Have assertive discipline system
5. Remember 5 steps of Assertive Discipline
6. Learn from experienced teachers
7. Understand the difference between rules and procedures
8. Establish useful procedures
9. Be prepared before the class
10. Plan and outline the daily material taught to students.
11. Execute "Teach-Rehearse-Reinforce" model
12. Build relationships with students
13. Use frequent praise
14. Build empathy
15. Prepare questions
16. Avoid yes/no questions
17. Maintain inner balance
18. Control emotions
19. Set positive expectations
20. Motivate students to learn and grow

Conclusion

This article is intended to help CTE teachers become better 'managers' of classrooms. The article summarizes various techniques aimed to create a positive and effective environment. The five steps of Assertive Discipline, Group Dynamics Theory, and the importance of rules and procedures have been discussed. Other topics explored included: What to do before the class, remembering lengthy presentations, the effect of first impression, the importance of learning students' names, and building student relationships. Techniques discussed are easy to learn and master. Applying these techniques on daily basis will positively influence classroom learning

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