Educational Software Use and Self-Reflection Skills

Angel Erich M. Jimenez, Harvy Gian C. Esmaya, Aira G. Bolante, Anne Maevel G. Rombaoa, Dhomdavid Joi R. Cornejo, Rowena Imelda A. Ramos, Arbert A. Dagangon, Maryann C. Taroquin, Mercedes M. Ibanez*

Adventist University of the Philippines
mmibanez@aup.edu.ph

ABSTRACT

Self-reflection skills are highly significant for students to enhance both their personal development and academic pursuits. The need for creative education and innovation highlights in recent decades where teachers change the way of teaching towards more creative methods and use new different technology applications to produce more knowledgeable students. However, self-reflection skills are at risk when implementing various types of educational software during the teaching and learning process. To determine the effect of educational software use to self-reflection skills, this descriptive-correlational study was conducted among 105 high school students. The result of the study revealed that educational software is highly used by the students and their self-reflection skills with its dimensions such as feedback, process, and product are also in high level. Furthermore, use of educational software significantly influences the self-reflection skills with its dimensions. This study concluded that educational software use is an effective tool for students to improve and enhance their personal development and effective academic performance through having good self-reflection skills. Implementing the use of educational software is recommended to help teachers and students have an efficient teaching and learning process. Further study may explore the association of educational software use on self-reflection skills of elementary and college students and include sex and year level as moderating variables.

Keywords: *educational software use, self-reflection skills*, *high school students, feedback*

INTRODUCTION

A sincere and brave self-reflection strengthened determination. It gives self-awareness for someone who needs to enhance their potential, motivation, assurance, and encouragement (Bailey & Rehman, 2022). According to Gupta (2023), self-reflection plays an important role since it aids in the formation of one's self-concept and promotes personal growth. Being able to reflect on oneself involves taking the time to consider, contemplate, assess, and critically analyze one's own ideas, attitudes, actions, and aspirations. It helps maintain one's objective and productivity by concentrating on the "what" rather than the "why" (Harris, 2023).

Self-reflection is not a natural talent, so at first it may seem selfish or embarrassing. However, with practice, learning and developing it will become easier, and the outcome may be more pleasant and efficient for everybody (The Open University, 2023). However, because

of modern technology there are lots of applications and software that could be used in teaching and learning processes. Unfortunately, it's not always easy to use educational software for effective self-reflection practice. People might run into difficulties like those experienced by students when using educational software such as Quillbot, ChatGPT, Canva, Microsoft Word, Brainny, Quizzes, Zoom, MS Teams and many more educational programs. As a result, cheating becomes easy for the students, and they may also start using dependable resources for their education.

Technological changes are altering everything from the way people work, to the way they interact and spend their free time together. Information, communications and multimedia technologies have an impact on this change. Effective use of technology and especially educational software has become a necessity to make initial reading and writing skills that will affect children's entire life and academic life more efficiently (Sahin & Özenç, 2021).

According to Kolyvas (2020), the need for creative education and innovation highlights the research findings in recent decades where teachers in the overwhelming majority want to change the way of teaching towards more creative methods and applications to produce knowledge. Additionally, every industry nowadays uses technology in some capacity, and every one of them necessitates familiarity with computers and the required software. Because of this, contemporary educational technology is becoming an increasingly important instructional instrument used at all educational levels, from early childhood centers to universities (Stanisavljević-Petrović, et al., 2015). With the help of powerful modern educational technology, students can learn through a variety of computer and multimedia learning methodologies, create their own learning styles, and access a variety of information sources. This provides a strong foundation for the process of individualization (Haleem, et al., 2022).

One of the most significant educational foundations is software. It is a collection of rational and immaterial elements that are presented through computer-generated learning materials (Younes, 2015). Students are more involved as a result, particularly when it comes to self-reflection; thus, frequently remember more information. The motivation and capacity for self-reflection of students can both benefit from these elements working together (Costley, 2014). But it's just as important to consider the disadvantages of utilizing software in the classroom. Students may experience mental and cognitive difficulties as a result, which may lead to an online addiction (Adeyemo, 2023).

Howard (2019) suggests that learning from mistakes and experiences requires self-reflection. This skill allows for in-depth reflection on actions, motivations, and the world, identifying areas for personal growth and transformation. Having feedback can help students identify their strengths and weaknesses in a piece of work. It can help anyone improve on their work by building on positive comments and using the critical ones to inform changes in themselves (Okaibedi, 2023).

The capacity of high school students on software use and its effect on their self-reflection skills has not been extensively studied. To preserve students' ability to self-reflect, researchers sought ways to identify the detrimental effects of using educational software on them. This study was conducted among 105 high school students and the findings reveled that educational software use positively influences the self-reflections skills of the respondents. Lastly, according to research, students' enthusiasm and engagement with educational software

will be increased when creativity and technology integration are explored and supported in the classroom.

LITERATURE REVIEW

This study adapted an e-learning theory of cognitive load theory (sweller & paas, 2019). E-learning theory is also composed of principles that can be integrated into instructional design that demonstrate how educational technology can be used to promote effective learning (Wang, 2012). Additionally, this study adapts variation theory which states that learning should expounds what makes it possible for learning to occur. Variation theory has important implications to the practice of teaching, especially in use in the design of educational software (lam, 2018; David, 2015). Lastly, this study adapted the mirror theory of self-reflection which assumes that the other perceives more about self than self can perceive. This theory explains that the other provides feedback to self in the same way that a mirror provides feedback about appearance that we cannot perceive unaided (Gillespie, 2003). According to Cooley (2019), the self is a social product formed out of three elements: the imagination of our appearance to the other person; the imagination of his judgment of that appearance, and some sort of self-feeling, such as pride or mortification. Interestingly, self- reflection for cooley is always entwined with judgments, leading to emotions such as pride, shame, guilt or gloating (Lundgren, 2004). With these theories, the researchers of this study aimed to support its findings that the use of educational software can help students to have better self- reflection skills with its dimensions such as feedback, process, and product.

Educational Software Use

Educational software tools are helpful to enrich teaching strategies, providing a more compelling means of exploration and feedback than traditional blackboard methods (Castro-Sanchez et al., 2009). Transformation of learning and teaching in higher education now offers greater educational equality through enhanced access and collaboration within the framework of lifelong learning in the digital age (Altınay, 2016).

Technology is increasingly moving to influence our lives, because most of the activities are being conducted through technology. Educational software use can benefit from embodying teaching, making difference in the activities, minimizing individual differences between students, attracting the students' attention to the lesson, giving the students the opportunity to apply what has been learned, addressing many different senses of students, motivating and supporting students. However, educational software use had lost its effect on students when it is used incorrectly (Sahin & Özenç, 2021).

New technologies helped students greatly in the conduct of educational Microscript. Students believe that new technologies and the Internet have helped them communicate with each other and develop collaborative relationships. However, students believe that innovative learning methods have not been integrated to a degree that changes the mentality of the teacher-centric teaching methodology at school. Also, most students consider that there is incomplete information at school about the necessity of innovative teaching methods such as micro-scenarios to raise awareness of all students in new ways of discovering knowledge (Kolyvas, 2020).

The effectiveness of training through educational software has not yet been studied in academia. In addition, educational software is a technological tool that is very expensive to create and update, therefore it is not being regularly updated. In a dynamic world, where changes often occur, this tool, which is not up to date on topics, may pose a serious problem. This is a paradox since technological tools are supposed to update us with the most recent and newest information anywhere and at any time so how can this gap be bridged (Tzur, et al., 2021)?

Self-Reflection Skills

Self-reflection is making time for investigation and critical analysis concerning one's beliefs, attitudes, actions, and desires. It involves analyzing own feelings and actions (Perry, 2022). Bailey and Scheherazade (2022) indicate that thinking on one's work might distinguish outstanding individuals from average ones. Executive functioning includes reflection. A sincere and brave self-analysis strengthened resolve. It gives self-awareness that everybody needs to quicken reaching their potentials, empowers, are valued, and encourages ongoing self-awareness (Bailey & Rehman, 2022).

Feedback

Feedback is one of the strongest teaching and learning strategies since it immediately affects students' actions and self-reflection. It provides evidence of the student's current level of competence and knowledge (Department of Education, 2019). Enhancing one's performance in all spheres of life, academic, professional, and personal is possible with the help of feedback reflection (LinkedIn, 2024). Students will improve their output by building on the positive comments and using constructive feedback to inform modifications to come. Therefore, feedback is vital for students' learning process and helps them improve every activity that they accomplish (Derby, 2023).

Process

Being present with oneself and purposefully turning attention inward to assess feelings, ideas, behaviors, and motivations are key components of self-reflection (Francis, 2022). It includes the opinions of one's own character, skills, values, roles, and relationships (Gupta, 2023). And it involves making time for in-depth reflection and an assessment of one's beliefs, attitudes, drives, and aspirations (Perry, 2022). Though it might be uncomfortable, self-reflection is a very powerful practice. It requires openness, courage, space, dedication, and time. This self-reflection in terms of process encourages everybody to consider their own emotions and actions so that they can ultimately develop personally (Cox, 2024).

Product

Wilson (2024) stated that gaining or a product of a deeper understanding of one's identity, values, and the reasons behind their thoughts and actions can be achieved through engaging in active self-reflection. It is crucial since it aids in the formation of self-concept and promotes personal growth. It assists individuals in identifying and comprehending their own feelings as well as how those feelings affect their attitudes and actions (Gupta, 2023). As Dyment (2010) says, frequent reflection exercises encourage students in developing critical

thinking skills, understanding their experiences, and reimagining them for the future. Adjusting better their life or help develop themselves is easier when they reflect on themselves and become more aware of what motivates them (Davis, 2023).

Relationship between Educational Software Use and Self-Reflection

According to Stud (2023), educational software has the potential to help students learn more effectively. Students can be engaged in the learning process, which means they are more likely to retain information and apply it in real life situations. In simple terms the relationship between educational software use and self-reflection skills is multifaceted, influenced by the design of the software, the learning environment, and the individual's engagement with the material. In addition, it does not lessen the importance of the tools of contemporary educational software in the current school environment, as their use in extracurricular activities and regular lessons can greatly enhance both the process of education in the classroom and education overall. When used thoughtfully, educational software has the potential to enhance self-reflection skills by promoting critical thinking, providing feedback, fostering interactive learning experiences, developing metacognitive skills, and integrating reflection activities into the learning process (Kapur, 2011; Bender et al., 2011).

Furthermore, most writers emphasize that some of the most appropriate, long-lasting, and successful ways to modernize school practices, including an individual particularly in the area of teaching, are through the use of educational technology tools (Villasenor, 2023; Gerlič, 2011; Mayer 2007). Lastly, according to Zaldívar-Colado et.al (2017), there are many advantages to using educational software. Teachers and students who are unfamiliar with its use may find it frustrating. Humans are the main factors of software acceptance to be used in education, which can only be managed by effective leadership and change management. The ability to self-reflect is widely recognized as a desirable learner attribute that can induce deep learning. Advances in computer-mediated communication technologies have led to intense interest in higher education in exploring the potential of digital tools, particularly digital video, for fostering self-reflection (Cheng & Chau, 2009).

METHODS

Descriptive research design was applied to describe, analyze and interpret the use of digital tools and self-reflection skills among high school students. The association between digital tools use and self-reflection skills was determined using a correlational study approach. Thus, this study is a combination of descriptive and correlational designs. The researchers gathered the necessary data during the second semester of the academic year 2023–2024 among high school students at Adventist University of the Philippines. Simple random sampling was applied to gather 105 respondents for study. Every section has an attendance sheet wherein the names of the students are numbered and arranged alphabetically. The total number of students was put in an online roulette, and the names chosen were asked to be to the participants. The Ethics Review Board (ERB) of the school approved the proposed study. Anonymity and confidentiality were observed during the entire study.

The instruments used in this study were a combination of a self-constructed and adapted based on the concepts taken from the review of related literature and studies. The Educational Software Use Questionnaire (ESUQ) was adapted from Alqurni (2024). It is focused on ascertaining the extent of education software use on high school students. It is composed of 8 questions using a 5-point Likert Scale, ranging from 1 (Never) to 5 (Always). Self-Reflection Skills Questionnaire (SRSQ) was used as a self-assessment tool to evaluate the self-reflection skills of the respondents of the study and used a 5-point Likert Scale ranging from 1 (Strongly Disagree to 5 (Strongly Agree). The questionnaire is composed of 15 items and was adapted from Van (2004). Table 1 shows that the instrument for educational software use is good ($\alpha = 0.844$) and all the dimensions of self-reflections ($feedback, \alpha = 0.713$;process, $\alpha = 0.738$; $and\ product, \alpha = 0.781$) are acceptable, which indicates that the instruments that was used to conduct the study is valid and reliable.

Table 1

Reliability of Educational Software Use and Self Reflection Skills Scale

Variables	Number of Items	Cronbach Alpha	Verbal Interpretation
Educational Software Use	8	0.844	Good
Self-Reflection Skills			
Feedback	5	0.713	Acceptable
Process	5	0.738	Acceptable
Product	5	0.781	Acceptable

Descriptive statistics of mean and standard deviation were applied to find the extent of educational software use and level of self-reflection skills of high school students. Person Product Moment Correlational Coefficient was utilized to find out the relationship between educational software use and self-reflection skills. Linear Regression Analysis was applied to strengthen the findings on influence of educational software use towards self-reflection skills.

RESULTS AND DISCUSSION

Tables 2 presents the extent of educational software use of the respondents. The result shows that the high school students are using educational software to high extent (mean=4.02, SD = 0.70). This indicates that educational software such as MS Teams, Zoom, Canva, ChatGPT, Quillbot, Bainny, Quizzez, and many more are highly used by the high school students.

Table 2

Extent of Educational Software Use of High School Students

	Mean	SD	Scaled Response	Verbal Interpretation
Educational Software Use	4.02	0.70	Often	Highly Used

Legend: 1-1.49 = Never; 1.50-2.49 = Rarely; 2.50-3.49 = Sometimes; 3.50-4.49 = Often; 4.50-5 = Always

Tzur et al. (2022) stated that educational software tools are highly effective applications that enable multi-learning environments and drive students into lessons.

Additionally, Sahin and Ozenc (2021) agree on this idea when they further elaborate that educational software used in computer assisted education has made teaching both more fun and facilitating teaching. These educational software tools are highly effective applications that enable multi-learning environments and drive students into lessons.

Furthermore, according to Ercan (2014) students tend to have positive learning experiences using software learning materials. Additionally, Mayer (2009) stated that Multimedia information, simulations, and interactive components are frequently included in well-designed instructional software, which can improve students' comprehension of difficult ideas and make learning more engaging and enjoyable.

Table 3 presents the level of self-reflection skills of the respondents. With an overall mean of 3.97 (SD = 0.56) respondents assessed the level of their self-reflection skills as high. All the dimensions of self-reflection skills are also high such as feedback (mean=4.04; SD=0.66), process (mean=3.94; SD=58), and product (mean=3.93; SD=0.78). The result implies that students are having good self-reflection skills because they are happy with other's feedback about them, they are trusting the process, they don't worry about the outcome, and they believe that their thoughts are influenced by their over-all well-being.

Table 3

Level of Self-Reflection Skills of High School Students

	Mean	SD	Scaled Response	Verbal Interpretation
Feedback	4.04	0.66	Agree	High Level
Process	3.94	0.58	Agree	High Level
Product	3.93	0.78	Agree	High Level
Self-Reflection Skills (Overall)	3.97	0.56	Agree	High Level

Legend: 1-1.49 = Strongly Disagree; 1.50-2.49 = Disagree; 2.50-3.49 = Neutral; 3.50-4.49 = Agree; 4.50-5 = Strongly Agree

Martincová et al. (2021) stated that self-reflection in the education process as a fundamental component of an individual's competencies, positively impacting academic success and becoming a specific condition for deep and meaningful learning. In the study conducted by Wei et.al (2022), high self-efficacy students were more active in seeking advice from instructors. They reported giving feedback based on both self-reflection and their peers' work at both the micro and macro levels.

Furthermore, Hattie, et.al (2007) highlights the importance of feedback in educational settings and examines how it can help students learn and succeed. Although the focus is not limited to student motivation, it does emphasize how feedback, particularly targeted, timely, and task specific feedback, can affect students' self-perceptions and inspire them to work toward their objectives. In addition, it recognizes how important it is for other people's input to have an impact on students' motivation and involvement. Students' intrinsic motivation can be increased and their desire to achieve their goals and dreams can be stimulated by feedback that is encouraging, educational, and growth-oriented (Deci, et.al 2001).

Table 4 presents the result of the study on the relationship of educational software use toward self-reflection skills with its dimensions. Educational software uses significantly

influence self-reflection skills (r=0.641; p=.000). All the three dimensions of self-reflection skills such as feedback (r=0.419; p=.000), process (r=0.591; p=.000), and product (r=0.615; p=.000) area also influenced by educational software use. The development of self-reflection skills correlates positively with the effective use of educational software to enhance and foster deeper learning experiences and self-reflection skills.

Table 4
Relationship between Educational Software Use and Self-Reflection Skills with Its Dimensions

	Pearson Correlation	Significance	Verbal Interpretation
Feedback	0.419**	.000	Significant
Process	0.591**	.000	Significant
Product	0.615**	.000	Significant
Self-Reflection Skills	0.641**	.000	Significant

* *Correlation is significant at the 0.01 level (2-tailed).

Kori et al., (2014) highlights the positive correlation between the development of self-reflection skills and effective utilization of educational software, ultimately fostering deeper learning outcomes. Additionally, that students regardless of their domains of study, educational software shows improvement in their learning, that is, students become better in self-reflection (Lew & Schmidt, 2011). Moreover, Kim et al., (2005) proves that educational software use illuminates students' perceptions of and contentment with technologically advanced learning environments which frequently incorporate educational software..

The regression analysis with self-reflection skills as the dependent variable is shown in Table 5. Results show that the total variance is explained by only one predictor, $F(1, 105) = 71.9$, $p < .000$) of this total variance accounted for 42% of students' self-reflection skills is attributed by educational software use. Furthermore, the results suggest educational software use is effective on self-reflection skills. It helps students become better at reflecting on their learning, figuring out what they excel at, and identifying areas where they can improve.

Table 5
Regression Analysis of Students' Self-Reflection Skills

	Unstandardized Coefficients		*Standardized Coefficients*	t	Sig	R	R^2	Adjusted R^2
	B	*Std. Error*	Beta					
(Constant)	1.793	.241		7.438	.000			
Use	.511	.059	.648	8.644	.000	.648	.420	.415

dependent: Self-Reflection Skills

According to Gupta (2023) self-reflection plays an important role since it aids in the formation of one's self-concept and promotes personal growth. With the help of powerful modern educational technology, students can learn through a variety of computer and multimedia learning methodologies, create their own learning styles, and access a variety of information sources. This provides a strong foundation for the process of individualization (Haleem et al., 2022).

CONCLUSION, IMPLICATION, SUGGESTION, AND LIMITATIONS

There is a significant relationship between educational software use and self-reflection skills of high school students which implies that the students are learning and using educational software well and their self-reflection skills are practiced and enhanced using the technologies. For the students to effectively self-reflect and use educational software, let them know that they are directed appropriately.

This study suggests that school administrators and teachers actively involve students in using educational software as it enhances their self-reflection skills. The teachers can support and encourage their students to still use educational software to boost their self-reflection skills. They can also help the students by making their activities integrated to educational software use. Educational software use should not be a barrier to self-reflecting because this activity will help students expand their knowledge, understand concepts, and develop self-observation among themselves. Researchers may find ways on how to make the self-reflection skills of students to continuously improve and cultivate it more. Further study may explore more on the association of educational software use on the self-reflection skills by including students from elementary to college level and differentiate their sexes and year level.

This study is limited on the use of educational software that is often used by the students where the study is conducted. The effectivity of different kinds of educational software used are not explored. This study is limited on the dimensions of self-reflection skills such as feedback, process, and product.

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