Tracer Study of Architectural Drafting: An Inputs for the Integration of Enhanced Learning Competencies in Faculty Development Program

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Abstract

This study aims to explore the profile of graduates in the field of architectural drafting, their learning capabilities, skills, and knowledge, and their readiness towards the workforce. The results will be the inputs to integrate the enhanced learning competencies to faculty development program. This study used a quantitative research design and random sampling technique to select the target graduates of the architectural drafting program from AY 2016-2020 which composed of 105 graduates based on the list given by the registrar's office. The data for this study collected through a survey questionnaire which was modified based on the Graduate Tracer Research Questionnaire from CHED. The results revealed that most of the respondents are single, male and most of them work in contract and regular roles, and many of them feel their jobs are connected to their academic program. Competitive salary and benefits, chances to use specialized skills, and the possibility of professional growth are the main reasons why recent graduates decide to remain in their current job. Moreover, graduates show a good grasp of industry concepts that are pertinent to architectural drafting and strong analytical thinking, problem-solving, and communication skills. Proficiency in fundamental drafting skills, CAD software usage, technical drawing standards, and professional ethics are demonstrated by graduates. Furthermore, with the knowledge and skills needed to thrive in the field of architectural drafting, graduates are well-prepared for the workforce. They exhibit a readiness to work with professionals in the field.

Keywords: Tracer Study; Learning Competencies; Architectural Drafting Students; Faculty Development Program

Introduction

Tracer studies involve tracking graduates of a particular program or institution over a period of time, and gathering data on their employment outcomes and other indicators of success (Quiteves et al., 2019). It is possible to identify patterns and trends in the skills and knowledge that are most important for success in a given field by analyzing the data that will gather. Several studies have been conducted on the use of tracer studies to determine the essential learning competencies required in various fields. The used a tracer study to gather data on the employment outcomes of graduates of an engineering program (Dotong et al., 2016). The study found that graduates who had strong technical skills and the ability to work effectively in teams were most likely to be successful in the field. Likewise, Sutadji et al., (2021) used a tracer study to gather data on the outcomes of vocational education and training programs which found that graduates who had strong technical skills, as well as communication and problem-solving skills, were most likely to be successful in the job market. Moreover, conducting tracer studies in an institution will determine the strengths and weakness of the program, the effectiveness of the program, and the needs of the industry by providing feedback from the alumni. This will serve as a basis to strengthen the needs of improvement in the areas where it is needed like curriculum revision or enhancement and faculty development program.

Furthermore, architectural drafting is a critical aspect of the architecture and engineering industry, as it involves creating detailed and accurate drawings of buildings and structures. In recent years, advances in technology have transformed the way architectural drafting is done, with the use of software applications such as Computer-Aided Design (CAD) and Building Information Modeling (BIM) becoming increasingly prevalent. Consequently, in order to ensure that architectural drafters are equipped with the necessary skills and knowledge to succeed in the field, it is important to determine the essential learning competencies that are required. Tracer studies can be used to gather data on the outcomes of education and training programs, and can provide valuable insights into the skills and knowledge that are most important for success in a given field.

Meanwhile, several studies have focused on the importance of technology skills in the field. One study by Ayebeng Botchway et al. (2015) found that proficiency in CAD software was a key factor in the success of architectural drafters. It also found that proficiency in BIM software was also important for success in the field, as it allowed drafters to create more accurate and detailed models of buildings and structures (Liu et al., 2019). In addition to technology skills, communication and collaboration skills are also important for success in architectural drafting. One study by Bakhoum and Wakita (2023) found that effective communication and collaboration between architects and drafters was essential for creating successful building designs. Jin et al. (2016) reiterated that collaboration between drafters and other members of the design team was essential for ensuring that the final product met the client's needs and expectations. Further, Steinert et al. (2016) focused on the importance of faculty development programs in enhancing the teaching and learning process. The study highlighted the significance of empowering faculty members with the latest knowledge and skills to impart to their students. This finding further emphasizes the need for faculty development programs in the field of architectural drafting that will front to the teaching and learning process that will help the students to become more skillful and competent in their field of specialization.

Generally, the use of tracer studies to determine the essential learning competencies required in various fields has proven to be an effective method for gathering data on the outcomes of education and training programs that anchors to the Vision, Mission, Goals and Objectives (VMGO) of the University. By analyzing data on the employment outcomes of graduates of architectural drafting programs, as well as their performance on relevant certification exams and other indicators of success, this study aims to provide insights into the skills and knowledge that are most important for success in architectural drafting. Specifically, the present study is about the tracer study of Architectural drafting which will explore the demographic profile of the graduates from the year 2016 to 2020. It will determine the level of acquired learning competencies, the relevance with the skills and knowledge acquired in the program to their current job. With this, the researchers will also know to what extent do graduates feel prepared for the workforce upon completing the program

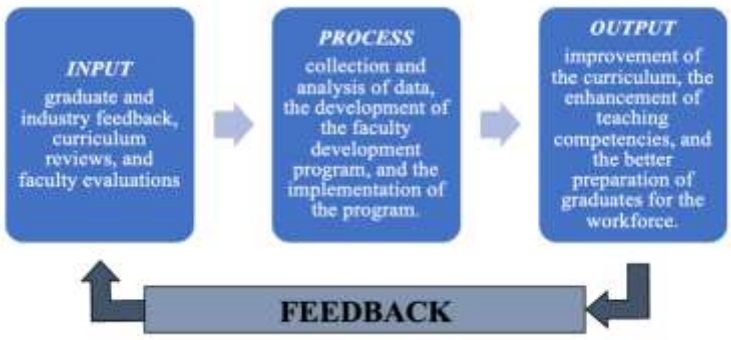

Figure 1. Conceptual Framework

The diagram consists of four main components: the input, process, output, and feedback loop. These components are interrelated and work together to ensure the effectiveness of the tracer study and the faculty development program. The input component of the diagram depicts the data sources that will be used to inform the tracer study, including graduate and industry feedback, curriculum reviews, and faculty evaluations. This data will serve as the foundation for the faculty development program, as it will identify the areas of the curriculum that require attention and the skills and knowledge that faculty members need to enhance their teaching competencies.

The process component of the diagram highlights the various stages involved in the tracer study and the faculty development program. This includes the collection and analysis of data, the development of the faculty development program, and the implementation of the program. The output component of the diagram depicts the expected outcomes of the tracer study and faculty development program, including the improvement of the curriculum, the enhancement of teaching competencies, and the better preparation of graduates for the workforce. The feedback loop component of the diagram highlights the importance of continuous improvement and feedback. This includes gathering feedback from graduates, faculty members, and industry professionals to ensure the effectiveness of the program and identify areas for improvement.

Method

This study used a quantitative research design, which will involve the collection and analysis of numerical data through a survey questionnaire. Likewise, random sampling technique utilized to select the respondents for the survey. Specifically, the study will target graduates of the architectural drafting program from AY 2016-2020 which composed of 105 graduates based on the list given by the registrar's office. The data for this study collected through a survey questionnaire using the adopted Graduate Tracer Research Questionnaire from CHED serve as the primary tool for data collection. The mentioned questionnaire was modified to include additional questions that are specific to the architectural drafting program. The questionnaire was distributed to the respondents through online platforms, such as email and social media with the help of present students, faculty and program coordinator. Moreover, the data collected from the survey questionnaire will be analyzed using descriptive statistics, such as mean scores, standard deviation and frequency.

Results and Discussion

Table 1. Civil Status of BSIT Architectural Drafting Graduates

Demographic Profiles		Architectural Drafting Graduates
Gender	Male	43
	Female	20
Status	Single	53
	Married	10
Year Graduated	2015-2016	12
	2016-2017	15
	2017-2018	14
	2018-2019	22
	2019-2020	0
Employment Status	Contractual	24
	Regular or Permanent	22
	Self-Employed	3
	Temporary	14

Relevance to the BSIT Program	Yes	45
	No	18

Table 1 presents the demographic profile of the respondents who taken Architectural Drafting in the year 2016-2020 where male composed of 43 while female has 20 graduates. This shows that the distribution has more male than female. Additionally, most of the respondents are single which has 53 graduates and 10 of them are married. Meanwhile, out of 105 graduates, 63 answers the survey questionnaire which was distributed in the 2016-2020. On the other hand, most of the graduates are contractual which composed of 24 graduates, 22 of them are permanent in their job, 3 are self-employed and 14 are temporary. Consequently, the job of the 45 graduates at relevant to their course which is a significant portion that the skills and knowledge acquired in the university were applicable to their professions and 18 graduates answer that their job are not relevant.

Table 2. Reasons for Staying the Job of BSIT Graduates

Reasons for Staying the Job	Frequency
Salaries and benefits	48
Career challenge	23
Related to special skill	25
Proximity to residence	3
Related to course or program of study	19
Peer influence	5
Family influence	4

The reasons BSIT graduates stay in their job are shown in Table 2, along with the prevalence of each reason. Most of the answer is because of the salaries and benefits they received in the company. This shows that a sizable portion of BSIT graduates made the decision to remain in their positions because of the competitive salary and benefits offered. Offering competitive pay packages is essential to keeping talented workers on staff. A number of studies demonstrate how crucial competitive salary and benefits are to keeping specialists on staff. Salary, perks and benefits are three of the most important variables affecting employee retention in the industry (Kumar et al., 2021). Likewise, graduates composed of 25 who choose to remain in their positions due to the opportunity to apply their special skills do so as a sign that their roles complement their areas of interest and competence. Research highlights how crucial skill use and work fit are to employee retention and happiness. Employee engagement and commitment to their roles are higher when they can make use of their specific abilities (Deen et al., 2021; Osborne & Hammoud, 2017).

Meanwhile, some graduates chose to remain in their positions due to the challenges and potential for advancement they provide. Architectural Drafting workers frequently look for positions that allow them to advance their careers and solve challenging issues. Studies highlight how important it is to give employees demanding tasks to keep them engaged as professionals. Retaining engaged professionals related to their course requires providing them with opportunities for skill development and career growth (Dachner et al., 2021). It is possible that 19 graduates who remain in their employment because they are related to their course or program of study do so because they feel that the knowledge and skills they learned throughout their BSIT degree are applicable to their career. Research on career development highlights the importance of education and job roles matching to improve job satisfaction and retention (Chan et al., 2016).

Moreover, peer and family influence were cited by a modest percentage of graduates as reasons for continuing in their current positions (frequency: 5 and 4, respectively). This implies that social influences have little bearing on how they make decisions. Organizational behavior research shows that intrinsic motivators like job happiness and fulfillment usually have a higher impact on employee retention, even while social pressures can influence job decisions to some level (Aizza Anwar et al.,2018; Nguyen My, 2017). Hence, a tiny percentage of graduates or frequency of 3 made the decision to remain employed because their place of employment was close to where they lived. This implies that for some people, location convenience is not really important. Research in urban planning and transportation emphasizes the significance of commute time and accessibility in job satisfaction and retention, even though most professionals may not prioritize closeness to dwelling (Hanni & Rao, 2024).

Table 3. Level of Acquired Learning Competencies of Architectural Drafting Technology Graduates

Learning Competencies	Mean	SD	Remarks
I am effectively communicating and has interpersonal skills to collaborate with clients, colleagues, and other stakeholders in the architectural design process.	4.47	0.89	Strongly Agree
I understand the business principles, marketing strategies, and project management to succeed as a professional architect or start a design-related business.	4.42	0.82	Strongly Agree
I am proficiency in using digital tools, software, and information systems relevant to architectural drafting, including CAD software, BIM applications, and project management software.	4.37	1.10	Strongly Agree
I can identify design challenges and applying analytical thinking to develop innovative and practical solutions within the constraints of the project.	4.53	0.80	Strongly Agree
I can evaluate architectural designs and making informed decisions based on logical reasoning, analysis, and consideration of multiple perspectives.	4.74	0.69	Strongly Agree
Weighted Mean	4.51		Highly Observed

Table 3 shows the graduates of Architectural Drafting Technology acquired learning competencies, along with mean and standard deviations (SD). All indicators are remarked as strongly agree but one standout which pegged at the mean of 4.74 and SD of 0.69. Graduates strongly agree that they are able to analyze architectural projects and make well-informed decisions based on logical reasoning, analysis, and consideration of many perspectives. Architectural critique and assessment are crucial elements of design education that promote a mindset of introspection and ongoing development (Gunarathne, 2018). Architects are able to evaluate design quality, functionality, and sustainability through the application of critical analysis and logical reasoning (Coucill, 2013). In addition, they can recognize design issues and use analytical thinking to generate creative and workable solutions within project restrictions is reflected in their analytical thinking and problem-solving skills (Mean: 4.53, SD: 0.80). To tackle challenging design

problems, critical thinking and problem-solving techniques are emphasized in architectural education (Ghonim, 2016). Architects can assess design possibilities, foresee problems, and suggest workable solutions by using analytical thinking (Groat & Wang, 2013).

Further, the graduates possess the interpersonal and effective communication skills required for collaboration in the architectural design process is indicated by the high mean score (Mean: 4.47, SD: 0.89). Studies conducted in the field of architectural education highlight how crucial it is for architects to have strong communication skills in order to cooperate with peers, negotiate with stakeholders, and present ideas to clients (Samuel, 2018). Cooperation is encouraged and architectural projects are of higher quality when there is effective communication (Rauf et al., 2020).

Likewise, they understand the business principles, marketing techniques, and project management necessary for success as professional architects or entrepreneurs in design-related businesses (Mean: 4.42, SD: 0.82). Research shows how important it is for architects to have both project management and commercial acumen in order to successfully traverse the challenges of the construction sector and oversee design projects (Alaghehmandan, 2023). Architects may strike a balance between project feasibility and profitability and creative design by having a solid understanding of business fundamentals (Lok, 2021). Meanwhile, the lowest mean among all indicators got 4.37 and 1.10 as SD which concur that they possess expertise in utilizing digital tools, software, and information systems associated with architectural drafting, such as project management software, BIM applications, and CAD software. Studies show how digital technology is becoming more and more essential to architectural practice, with CAD and BIM software turning into indispensable resources for design, visualization, and teamwork (Sandberg, 2015). Digital tool proficiency improves architectural drafting accuracy and efficiency (Heidari, 2018).

The Overall Weighted Mean of 4.51 which remarked as Highly Observed. This weighted mean shows that graduates have an observed level of learning competencies that is high by all measured metrics. Effective architectural education and training programs that prioritize a holistic approach to design education, comprising technical skills, critical thinking, and professional values, are linked to high levels of learning capabilities (Aquino & Garcia, 2023).

Table 4. Level of Skills and Knowledge of Architectural Drafting Technology Graduates

Skills and Knowledge	Mean	Standard Deviation	Remarks
I mastered the basics of architectural drafting, such as line work, scaling, symbols, notation, and drawing conventions.	4.72	0.92	Strongly Agree
I understand and create various types of architectural drawings, including floor plans, elevations, sections, details, and schedules.	4.42	0.98	Strongly Agree
I am familiar with different building materials, their properties, and Building construction techniques to accurately represent them in architectural drawings.	4.26	1.08	Strongly Agree
I am proficient in using CAD software to create, edit, and manipulate 2D and 3D architectural drawings and models.	4.58	1.10	Strongly Agree

I am having knowledge of local, national, and international building codes, zoning regulations, and accessibility standards to ensure compliance in architectural designs.	4.05	1.00	Agree
I recognized technical drawing standards, such as line weights, dimensioning practices, title blocks, and annotation styles.	4.47	1.00	Strongly Agree
I am creating and manipulating 3D models of architectural designs, applying textures, materials, and lighting for realistic visualization.	4.42	0.98	Strongly Agree
I am working effectively in multidisciplinary teams, coordinating with architects, engineers, contractors, and consultants, and presenting design ideas clearly to stakeholders.	4.21	1.00	Strongly Agree
I am demonstrating a systematic approach to problem-solving while paying close attention to detail in the creation of accurate and comprehensive architectural drawings.	4.53	0.76	Strongly Agree
I understand and uphold professional ethics, integrity, and responsibility in architectural drafting, including confidentiality, conflicts of interest, and copyright issues.	4.63	0.72	Strongly Agree
Weighted Mean	4.43		Highly Relevant

The information in Table 4 sheds light on the degree of skills and knowledge held by graduates in Architectural Drafting Technology. Among all indicators, most got a remark of strongly agree and only one indicator remarks as agree. The graduates have mastered basic drafting abilities such line work, scale, symbols, notation, and drawing conventions, as evidenced by the high mean score (Mean: 4.72, SD: 0.92) as evidence that they gain the understanding of the foundations of their program. The basis of architectural practice and education is architectural drafting. To successfully express design ideas and intents, architects must have a solid understanding of the fundamentals of drawing (Plowright, 2014). Architectural documentation is guaranteed to be accurate and clear when drawing norms are understood (Emmons, 2019). Likewise, graduates comprehend and uphold professional ethics, honesty, and accountability in architectural drafting which was pegged at mean of 4.63 and 0.72 as SD. To preserve integrity, credibility, and confidence in their professional practice, architects must uphold professional ethics (Chappell & Dunn, 2015). Maintaining moral standards protects the public's trust and guarantees architects behave morally.

Moreover, they are adept in utilizing CAD software for both 2D and 3D architectural drawings and models (Mean: 4.58, SD: 1.10). CAD software has become a need for architects, greatly increasing the precision and efficiency of drafting jobs (Khoroshko,2020). Architects that are proficient with CAD are better able to assess spatial linkages, explore design choices, and effectively convey ideas (Melendez, 2019). Graduates also exhibit a methodical approach to problem-solving while producing precise and thorough architectural drawings with a mean of 4.53 and SD of 0.76. Architects need to be adept in problem-solving, which entails recognizing, evaluating, and resolving design obstacles (Oluwatayo et al., 2017). Using a methodical approach to problem-solving guarantees that design-related concerns are addressed completely, effectively, and efficiently (Chokhachian, 2014).

In addition, they are aware of technical drawing standards, such as line weights, dimensioning procedures, title blocks, and annotation styles (Mean: 4.47, SD: 1.00). A uniform vocabulary for expressing design intent and technical data is provided by technical drawing standards (O'Dell, 2015). Clarity, uniformity, and correctness in architectural documentation are ensured by following standardized drawing techniques (Sacks et al., 2016). On the other hand, the lowest mean among all indicators pegged at 4.05 and 1.00 as standard deviation. In order to guarantee the welfare, safety, and health of building inhabitants, architects must comprehend and abide by building norms and laws. The resilience and sustainability of constructed environments are also enhanced by adherence to laws (Bocchini et al., 2014). Furthermore, the weighted average mean 0f 4.43 shows that the graduates' observed degree of knowledge and skills is highly relevant for all assessed parameters. The university prepare graduates for professional practice, architecture education must provide them with highly applicable skills and knowledge. Graduates are guaranteed to be prepared to handle the rigors and difficulties of the architectural profession by the applicability of their competencies.

Table 5. Level of Preparedness of Graduates for the Workforce

The Architectural Drafting program/graduates…	Mean	Standard Deviation	Remarks
…prepare the graduates for the demands and challenges of the workforce.	4.26	0.86	Strongly Agree
… has the ability to apply the knowledge and skills …acquire knowledge in the real-world work scenarios.	4.53	0.87	Strongly Agree
… has equipped with the necessary technical skills for the workforce.	4.47	0.85	Strongly Agree
…prepare the graduates for the job search process (e.g. resume and cover letter writing, job interview skills, networking, etc.	4.37	0.86	Strongly Agree
…internship or work placement experience prepare the graduates for the workforce.	4.53	0.84	Strongly Agree
…prepare the graduates to work collaboratively with architects, engineers, and other professionals in the industry.	4.63	0.84	Strongly Agree
… prepare the graduates for the practical aspects of architectural projects, such as drafting plans, creating detailed drawings, and understanding building codes.	4.63	0.84	Strongly Agree
… were effective in developing the problem-solving abilities of the graduates in the context of architectural design and drafting.	4.53	0.78	Strongly Agree
…provide the graduates with exposure to industry-standard software and tools used in architectural drafting.	4.47	0.78	Strongly Agree
… prepare the graduates to adapt to emerging trends and technological advancements in the architectural industry.	4.53	0.85	Strongly Agree
The overall quality of instruction and teaching methods in the Architectural Drafting program were effective with regards to workforce preparedness.	4.42	0.94	Strongly Agree

Weighted Mean	4.49	Highly Acceptable

Table 5 shed light on how ready Architectural Drafting graduates are for the workforce. All indicators remark as strongly agree and two indicators stood out with a mean score of 4.63 and 0.84 as SD respectively. The curriculum has prepared them to work cooperatively with architects, engineers, and other industry professionals and the program prepares them for the practical parts of architectural projects, such as drafting plans, generating detailed drawings, and knowing building codes. With this, architects must collaborate extensively with stakeholders and interdisciplinary teams as part of their architectural profession (Butt & Dimitrijevic, 2022). To prepare graduates for the collaborative character of architectural practice, educational programs should promote collaboration, communication, and teamwork skills (Ghonim, 2016). In addition, to guarantee that graduates can handle the technical facets of architectural projects, architectural education should strike a balance between academic knowledge and practical abilities (Salama, 2016). To provide high-quality design documentation, architects must be proficient in drafting, detailing, and code compliance (Allen & Rand, 2016).

Moreover, four indicators got a mean score of 4.53. They can apply the knowledge and abilities they have learned in the program to real-world job circumstances, can concur that their workplace or internship experiences have helped them get ready for the workforce, can express a strong agreement that the program has a positive impact on their ability to solve problems in the context of drafting and architectural design, and the curriculum helps them adjust to new trends and technological improvements in the architecture industry. Graduates must receive an application-oriented education in order to be ready to handle the rigors of professional practice. Graduates are more effective and adaptable in the job when they can apply their academic knowledge to real-world scenarios (Boss & Krauss, 2022). In addition, internships and work placements offer students priceless chances to obtain practical experience, make industry connections, and apply what they learn in the classroom to real-world situations (Helyer & Lee, 2014). Work-based learning improves graduates' employability and preparedness for professional practice (Atkinson, 2016; Morley, 2018). Architects need to be proficient in problem-solving, which includes recognizing and resolving design issues (Oluwatayo et al., 2017). In order to equip graduates to tackle intricate design issues, architectural education ought to foster critical thinking, inventiveness, and adaptability. As a result of advancing technology, growing concerns about sustainability, and shifting societal demands, the architectural profession is always changing (Ramilo & Embi, 2014). To prepare students for future practice, education programs should introduce them to cutting-edge digital tools, emerging technologies, and creative design approaches.

On the other hand, the lowest mean got 4.26 among all indicators and has standard deviation of 0.86 which firmly concur that the curriculum has equipped them for the rigors and complexities of the workforce. Graduates of architectural schools should be prepared to handle the challenges of professional practice (Matarneh, 2017). Exposure to real-world situations, hands-on training, and the development of critical thinking and problem-solving abilities are all necessary components of workforce preparation.

Furthermore, the weighted mean of 4.49 among the respondents shows that graduates' level of workforce readiness is highly acceptable in all assessed areas. The general acceptability of graduates' readiness for the workforce is a measure of how well the educational program has prepared students with the skills, knowledge, and competences required for professional activity.

Conclusions

The gathered data offers important insights into the profile of graduates in the field of architectural drafting, their learning capabilities, skills, and knowledge, and their readiness towards the workforce. The results will be the inputs to integrate the enhanced learning competencies to the faculty development program. Consequently, males and singles make up the bulk of graduates in architectural drafting. A sizeable portion of respondents work in contract and regular roles, and many of them feel their jobs are connected to their academic program. In terms of the factors affecting job retention, competitive salary and benefits, chances to use specialized skills, and the possibility of professional growth are the main reasons why recent graduates decide to remain in their current job. Decision-making is largely influenced by personal and professional concerns, with little impact from peers or family.

Moreover, graduates show a good grasp of industry concepts that are pertinent to architectural drafting and strong analytical thinking, problem-solving, and communication skills. They are excellent at identifying problems with designs and using logic to come up with original solutions. Proficiency in fundamental drafting skills, CAD software usage, technical drawing standards, and professional ethics are demonstrated by graduates. They know best practices for architectural documentation and have a methodical approach to problem-solving. Furthermore, with the knowledge and abilities needed to thrive in the field of architectural drafting, graduates are well-prepared for the workforce. They exhibit a readiness to work with professionals in the field, manage the hands-on parts of architectural projects, and adjust to new developments in technology and fashion.

Based on the findings, the following recommendations are put forth to improve the Architectural Drafting program's efficacy and graduates' preparedness for the workforce and to have faculty development program to enhance and achieve the learning competencies of the students. The university may help graduates advance their professions and achieve professional advancement, offer ongoing chances for faculty development, networking events, and mentorship programs. Likewise, make sure that the curriculum is regularly reviewed and updated to reflect changes in the architectural drafting and new trends and technology breakthroughs to enhance the learning competencies aligned to the VMGO of the University.

Consequently, the university may include training courses and seminars to improve soft skills like leadership, teamwork, communication, and flexibility. These are crucial for productive teamwork and career success. Enhance internship programs to give students practical experience, exposure to real-world projects, and chances for networking and mentoring with professionals in the field.

In addition, ensure that students have a seamless transition from college to the workforce, provide extensive support services such as career counseling, help with job placement, and alumni networks. And to promote creativity, problem-solving abilities, and the development of cutting-edge solutions in architectural drafting, support research efforts and innovation projects within the curriculum. The Architectural Drafting program can further improve the preparedness and competitiveness of its graduates in the ever-changing architectural business by putting these suggestions into practice.

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