

Faculty engagement in critical reflection and transformative learning

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Abstract

Qatar's education system is at the crossroad of transformational measures under the 2030 vision of educational reforms and agendas. Faculty engagement in critical reflection has been attributed as the most effective technique in transformation learning. It identifies the gaps, efficient learning designs, and student-oriented outcomes. According to the literature and theoretical understanding, critical reflection is an important determinant of the educational system outcomes, incorporated into the teaching or faculty members. This study also explores the essential role of reflection theoretical framework in the faculty engagement to the educational system and its performance. Three types of critical reflection content, process, and premise under curriculum, instructional knowledge, and pedagogical knowledge have been analysed. The study design uses the mixed methodology based on the quantitative and qualitative assessment of the collected data. A Survey of the faculty members has been conducted on Kreber's framework of the interview guide. Theoretical implications of the critical reflection have been used as the analytical tools to develop the narratives about the engagement of the faculty members with types of critical reflection. The findings suggest that faculty require scholarships for reflection development to promote efficient educational learning outcomes in Qatar's higher education system.

Keywords: Critical reflection, Transformational learning, Faculty engagement, Qatar Education

Introduction

Currently, immense attention has been ascribed to science and society by including the international learning approaches. The modern teaching and learning methods aim to enhance the quality of outcomes, with the development of a critical mindset running in the state's economic, human capital development. To achieve the goals of efficient human capital, the educational system plays a revolutionary role that needs to address the prevailing social, cultural, financial, and political ills of the system. Qatar, a Gulf state, faces similar social, cultural, conventional, economic, and political challenges. The educational system of Qatar has been in a continuous evolutionary process while aiming at the 2018-2022 sustainable education agenda (Ahmed, 2018). This agenda has been marked under the global sustainable education goals for systematic improvement of the educational system. The Gulf Cooperation Council states are implementing the Western education system by decentralizing the policy of the

educational system. It will reduce the political influence, ensure transparency, and promote a diverse learning system, including scientific and technical Education (Zguir et al., 2021). The oil economy of Qatar has faced immense economic imbalances in the state, which affects all the related administrative units as well. The decentralization of the educational system is attributed to the sustainable goals of the education system. The higher education system requires a sustainable, diverse, and analytical approach to learning and teaching incorporated by the stakeholders of the educational system. The nature of sustainability challenges the system faces at the hands of dominant educational pedagogies is characterized as social, financial, and political personality (Christie et al., 2015). These challenges escalate the increasing complexity of the uncertainty in the learning outcomes. To promote diverse and efficient learning, engagement of the teaching scholarship is essential.

The role of faculty, stakeholders, and teachers is crucial in developing economic knowledge-based human capital, which is determined as Qatar's sustainability goals (Hassen, 2020). The learning competencies of the faculty have also been ascribed as an essential component of the classroom outcomes. Current modern transformation learning tools have been used in the western educational system incorporating digital and online learning (Rosenbusch, 2020). In addition, the skills and knowledge of the faculty members in modern education can provide better outcomes within this context.

Many researchers have ascribed the theory of education transfer and critical reflection as an efficient tool for improving educational policies. The emerging transformative learning has improved the system by incorporating four generative methods. Firstly, the theory of reflexive social learning and capabilities. Sociocultural activities, critical phenomenology, and new social movements of the post-colonial and decolonization aspects. These theoretical implications, along with the sustainability goals of curriculum development, integrational Education, the importance of technical education, and skill-building, have been identified as effective ways of achieving the required standards (Al-Jaber and Al-Ghamdi, 2020). Transformational learning has been described as the transformation process according to the set frame of reference created based on mindsets, habits, perceptions, and cultures. These transformations aim to generate outcomes capable of inclusive, discriminating, and emotional changes with reflective abilities for making own beliefs and opinions (Mezirow 2018). It uses the frames of social, cultural, psychological, and economic nature integrating with the individual perception in critical reflection development. It implies that teachers' critical reflection and professional learning approach are detrimental to their outcomes. The consciousness-raising regarding critical thinking is also necessary to give the teachers abilities for addressing classroom dilemmas while generating decision-making abilities (Ebadi and Gheisari, 2016).

The upcoming sections highlight the implications of the theoretical framework of transformational learning in critically reflecting the teacher's performance and education.

1.1. Rationale

This study is a mixed methodology, recruiting the quantitative and qualitative research approaches. The research addresses the theoretical implications of the critical reflection

framework with the faculty engagement. According to the literature and theoretical understanding, critical reflection is an essential determinant of the educational system outcomes, incorporated into the teaching or faculty members. It can improve the learning outcomes by developing knowledge-based human capital development required by Qatar's sustainable educational goals. The survey of faculty members has collected the longitudinal data on the face-to-face questionnaires. Kreber's (2006) model has also been used for formulating the analysis. The analysis of collected information has been explored under the theoretical implications of transformative and critical reflection frameworks. The interpretation derived from implementing the theories has been developed into narrative synthesis and a qualitative outcome approach.

1.2. Significance of study

Under Qatar's sustainable educational system goals of 2018-2022, the projects regarding efficient transformative learning have been incorporated. The literature provides immense support to the theoretical implications of transformative and critical reflective learning in faculty development, ultimately improving the educational reforms and policies. In addition, limited research has reported the implementation of crucial reflection in improving academic performance and outcomes. This research has a significant role in addressing a considerable intervention strategy required during the educational system's development.

1.3. Aims and Objectives

The study aims to identify the purpose of the methodology being used and introduce perceptions of the author and researcher about the subject research (Thomas and Hodges, 2010). This study aims to explore the role of critical reflection theoretical framework in the faculty of the educational system, identifying its potential benefits and differences. The research objectives focus on the researcher's approach to selecting methods according to the research questions. The purposes of this research are described as follows;

- The critical reflection framework affects the faculty performance in the educational system.
- Knowledge-based critical reflection promotes learning and human capital development.
- Qatar's educational system faces multiple challenges in incorporating critical reflection about learning.

Literature review

This section identifies the related literature regarding evidence-based approaches for implementing critical reflection in the educational system.

2.1. Transformative and critical reflective theory

The university and organization itself pose the vision of learning in the higher education system by incorporating the relationship between academics and students and the surrounding community (Liu, 2015). Critical reflection, or critical thinking, has been introduced as the idea of postmodern theories that recruit the role of power dynamics and perspective development as an essential element of the transformation (Kreber et al., 2012). Transformative learning

theory is also regarded as the perspective transformation and emphasizes the critic of social actions. The constructive developmental psychologists believe that transformation is described as the movement of predictable norms in the human adult capacity and later ability to engage in the transformative process led by the critical self-transformative reflection of the discourse and outcomes (Mezirow, 2018). The learner's psychology is described as the 'habit' introduced in subjects' behavioural and critical thinking (Torff, 2006). Mezirow's theory of transformation is also directly impacted towards the connection with Marx, Freud, and Socrates in relation to conceptualizing the role of social action, social movement, community development, economic and cultural frames on the development of critical reflection (Fleming, 2018; Mezirow, 2018).

The recent studies conducted by Hassen (2020) analysed the incorporation of the knowledge-based economy perception in Qatar and Lebanon. The governments of the Gulf States are evaluating the strengths and weaknesses of the knowledge-based economy and human capital development in the economic growth, which emphasizes that the educational system must drive the economy. The regional, intra, and interstate political instability have been attributed to the lack of Education, social norms, unemployment, and imbalance of the social structure (Azeng and Yogo, 2020). The findings of Hassen (2020) identified that policy implication in terms of an educational system can provide knowledge-based labour and increase human capital development, promoting the state's economic growth and political stability.

Critical reflection also promotes nonconventional lending in social and educational norms. The "Managing systemic change: inquiry, action, and interaction" module formation in a UK-based educational institute enhanced students' ability to engage in social actions through systemic inquiry and interaction-based learning outcomes. By implementing this module, the students were also able to develop a critical appreciation of the system practice and the social learnings retrieving the specific individualized experiences. The integrational approach of the module engaged them in activities like blogging and online discussions related to systemic inquiries. The study conducted by Abu-Tineh and Sadiq (2018) revealed that school researchers in Qatar showed effective improvement in professional development after incorporating mentoring model-based intervention from experienced teachers. However, the online training programs were ineffective in the professional development model.

The role of critical reflection in the teaching method is expressed. The studies reported that teachers' process of struggle in the experience, and terms of social and financial aspects, gradually replaces the practice within the classroom (Ebadi and Gheisari, 2016). Efficient policymaking is required to address the classroom dilemmas posed by teachers and students. Moreover, the teacher's background in professional development and social and economic conditions influence the choice of teaching methodology (Adeyele and Yusuff, 2012).

The framework of transformational and critical reflection in the teacher educators is employed to analyse teachers' prospects in the transformation of learning procedures. The critical reflection does not only argue about the social trigger. Instead, the cognitive processes involved in future development are also being studied (Liu, 2015). The content of thinking, what they reflect on, the goals of their thinking, and why they are reflecting on a particular matter are included in the content reflection domain. The process of reflection identifies the cognitive and

psychological perspectives of the teachers. The goal of reflection is to analyse how their thinking influences the teaching practices and learning in the classroom. Transformative learning can be achieved by the critical reflection of the current situations.

The previous literature analysis identified multiple higher education teachers' continuing Education for professional development (Beauchamp, 2015). The continuation of the Education is based on the following four derived themes from the literature, 1) internal and external rationales, 2) cognitive processes deriving reflection, 3) action on the cognitive functions, and 4) self-analysis of the contextual reflection. The authenticity through teaching also aims to provide scholarships for the teachers. According to Mezirow's (2018) perceptions of critical reflection, scholarship is an authentic practice for learners, teachers, and students (Lundgren and Poell, 2016) as both are the stakeholders of Education involved in transformative learning in an objective and subjective requiring critical reflection as a tool for achieving the goals of transformation.

2.2. Challenges to transformational learning

While addressing the transformation, it faces some challenges and barriers in implementing required alterations. For example, as Gillett-Swan (2017) reported, one size does not fit all. The online and face-to-face learning system presents different activities that might pose specific challenges of acceptance for the students. The online learning environment faces challenges of competency and the proficiency of the academic staff in technological skills. The teachers and the regular workload also report the increased workload in online learning. The challenges faced by the critical reflection are categorized under two concepts, i.e., challenges of the context and identities (Beauchamp, 2015). The in-depth analysis of Qatar's educational system addresses the requirement of the transformative learning experience with deeply held beliefs of the 21st century and leadership development. The leadership development program will foster the hindered transformative learning experience as well. The thematic analysis of the findings of Schnepfleitner and Ferreira (2021) identified significant barriers in transformative learning, including identification of the stakeholder expectations, inaccurate selection process, inappropriate English discourse in the curriculum, poor alignment of the content, and cognitive skills among the learners, time constraints, inclusion of autonomous components in the educational process, imbalance of the social resources and dynamics of the group. The factors contribute to the poor integration of the transformation in the education process.

Methodology

3.1. Research design

This research incorporates mixed methodology, a quantitative and qualitative approach to investigate the faculty engagement regarding critical reflection and transformation. The mixed method of study can develop a rich and phenomenological picture of the investigation using quantitative and qualitative research paradigm. The careful combination of two different indicators analyses the complementary angle and lays out a comprehensive study image (Mackey and Bryfonski, 2018). The qualitative part of the study is based on Kreber's (2006)

analysis following a critical reflection framework. The quantitative portion of the researcher collects longitudinal data from the survey questionnaire analysis. The questionnaire survey has been attached in Appendix 1. In addition, this study investigates the framework of critical reflection and transformational theory for the scholarship of university teaching faculty (Kreber et al., 2006). The qualitative part of the research identifies the three-reflection identified by Mezirow (1991) illustrated in Table 1, i.e., content, process, and premise reflection. This reflection helps develop the Kreber framework-based scholarship for university teaching, engaging critical reflection on three types of knowledge while yielding nine different forms of reflection.

Following the three forms of reflection identified by Mezirow (1991), namely content, process, and premise reflection, Kreber developed a framework of Scholarship for university teaching engaging critical reflection relating three forms of reflection to three types of knowledge and yielding nine forms of reflections for university teaching, as shown in the table below;

3.2. Data collection

The data for the longitudinal survey has been collected from the interviews of the faculty members related to the Interview guide derived from the scholarship of teaching model (Kreber and Cranton, 2000). The survey was conducted through face-to-face interview sessions. The faculty members, the participants of the survey study, were made aware of the ethical considerations of the study.

3.3. Data analysis

The purpose of the research was threefold Firstly, to analyse the extent of the knowledge of academic faculty about the reflection, leading to transformative learning. Secondly, the exploratory study aimed to identify the challenges and facilitate reflection knowledge factors. Thirdly, the recommendations and alterations in the current implications to adapt to better transformative learning capacities. Finally, the survey data collected from the interview questionnaire was analyzed through the theoretical implications for the critical reflection framework (Kreber et al., 2006). The interview questions will be explored for narrative development under the theoretical implications.

The objective is to make the reflective process more visible and concrete. Finally, in keeping with the study's exploratory nature, the goal was to get preliminary insights into variables that might explain disparities in academics' teaching reflection and focus on further research.

3.4. Research questions

Identifying research questions helps the researcher formulate the research methodology, process, analytical approach, and prediction of possible outcomes (Alvesson and Sandberg, 2011). Moreover, it includes hypotheses and objectives that guide the decision-making process (Farrugia et al., 2010). The quantitative and qualitative research has been constructed based on the following research questions.

1.What types of reflection and scholarship of teaching QU faculty are engaged in?

- 2.To what levels are faculty engaged in the critical reflection that may lead to transformative learning?
- 3.What are the challenges and potentials for facilitating critical reflection for QU faculty?
- 4.How can critical reflection and transformative learning be better facilitated and improved?

Results and Discussion

This section explores the research questions of the study's evidence-based implications and theoretical applications under the reflection model. The research explores three reflections on the pedagogical teaching quality and improvement gaps. First, the questionnaire is based on the knowledge perceptions of faculty regarding critical reflection in transformation formulated on the Kreber et al. (2000) interview guide. Critical reflection is ascribed under different essential concepts of thinking, reflection, reflexivity, and critical analysis with poorly defined criteria (Lom, 2012). The framework-based reflection will analyse the teaching scholarship measures' requirements, recommendations, and limitations. The survey analysis within the reflective model's theoretical framework has been explored in the findings of this section.

4.1. Types of reflection and scholarship of teaching QU faculty:

For the conduction of prospective teachers' critical reflection, the teachers were asked about the critical reflection of the content within the domain of instructional knowledge. The teachers about the course setup and approaches indicated in the course work were analysed. The teacher's analysis was fundamental and addressed a critical approach to understanding. According to previous researchers, critical reflection, or reflective practice (RP), is highly accepted in higher education. It is regarded as an individual process, attached to the self-observational, and experienced data. The collaborative learning effects on individual experience are also termed as 'other's experiences form a large part of individual experience. Mezirow's theory of transformative learning is based on the model of reflection, addressing three types of reflections, i.e., content, process, and premise (Kirpalani, 2017). Further, this reflection model analyses teaching knowledge in instructions, pedagogy, and curriculum.

4.2. Reflection on Content, Process, and Premise within the instructional, pedagogical, and curriculum domains:

The participant's knowledge of content reflection was asked 1) what instructional strategies or approaches to use? 2) What do you consider the most important strategy or approach you should use? The participants used multiple-choice questions, practical approach, class activities for the instructional strategies. Class activities are the most accepted instructional approach on the second question of the best strategy. The goals of teaching activities are linked to the instructional strategies (Lundgren and Poell, 2016). According to Mezirow' (2,018), content reflection within the domain of instructional knowledge also addresses the problem in teaching. Moreover, content reflection is defined as the description of the problem in the teaching instructional knowledge. The questions identify that 'I am using multiple-choice questions and class activities as the evaluation criteria of transformative learning. The content reflection will analyse the goal is to help students build discipline among students' is this instructional strategy fulfilling those goals.

Further, Mezirow's theory also argues that content reflection identifies the grounds and justification of individual beliefs for making interpretations of the beliefs (Schmohl, 2017). Content reflection within the pedagogical knowledge domain reflects on what I know about how students learn and develop? The interview question, what do you know about how students learn? The reflection on the pedagogical knowledge identifies that the problem is to clarify my goals related to the teaching method and address the process reflection. The plans are addressed under curriculum knowledge, where teachers can evaluate the efficiency of teaching by reflecting on the individual goals, criteria of evaluation, and identification of the student's learning outcomes. Classroom learning depends upon the curriculum, method of instructional and pedagogical adaptations (Husmann and O'Loughlin, 2019). The evolution of information access needs to be infused with the instructor's strategies as a learning component, and these learning strategies can benefit students from all subjects.

Process reflection defines the method of problem-solving in teaching instructional knowledge (Schmohl, 2017), further leading to recommendations and change of pedagogy. The process reflection asks questions like, are the goals feasible enough to reach? I have helped the students achieve the goals and how effective the strategies were in reaching the goals. The Process reflection on curriculum knowledge will analyse the goals. In contrast, pedagogical knowledge will address if the teaching methods of class activities and multiple-choice questions are effective. The instructional expertise will analyse if the strategies of multiple-choice and classroom practical activities have provided goals, i.e., discipline in the classroom. The reflection on the process within the instructional domain addresses the question of what led me to adopt a specific strategy. The educational knowledge and professional history of experience can also be applied in replacing the teaching methodology of educators in the classroom (Sabah and Du, 2018). The pedagogical domain questions addressed that practical classroom activities improve graduate students' learning of science and nursing (Lom, 2012) and those virtual aids and technology also enhance the classroom experience through a long-term learning effect (Welch and McDowall, 2010). Incorporating digital tools in classroom activities can reduce the problems of transformative learning and promote the goals of achieving discipline and high student performance outcomes.

Finally, Premise reflection evaluates the questions on presuppositions underlying the knowledge of teaching faculty on reflective strategies. The engagement of faculty in practical ways to develop learning abilities is also critically reflected in the instructional expertise and pedagogy. The premise critical reflection uses double-loop learning, asking why it matters if I attend to the problem and does problem matter or have any solution or alternative. The premise reflection asks questions related to the core beliefs and issues defined under content reflection aspects and positioned by the process reflection to construct new knowledge and structural transformation (Sellheim and Weddle, 2015). The premise reflection is based on the individual's social, economic, and professional evolutionary history-shaping educators' beliefs (Taylor, 2017). For example, the departmental faculty member identified active learning as positive teaching philosophy with more active student-centered outcomes. The faculty members can adapt to experimented teaching philosophy and obtain collaborative student-oriented outcomes.

4.3. Faculty engagement and critical reflection that may lead to transformative learning:

The academic staff would differ in engagement regarding critical reflection leading to transformative learning. The role and individual beliefs of the staff members can play a significant role in determining the engagement in teaching reflection strategies (Henry and Bruland, 2010). Some researchers also identified the part of cognitive engagement driven by experiences in the teaching and personal life that further shape the extent of engagement regarding the faculty in transformative learning by critical reflection (Lom et al., 2012). Reflective practice is highly manifested in the inquiries related to the extent of engagement of teachers and faculty in critical reflection, leading to transformational learning. Institutional practitioners face the challenge of accounting for interpreting students' performance as teacher-student configuration. The study conducted by Henry and Bruland (2010) on teaching assistants' perspectives cast as mentors to the students, attended all classes with students, conducted interviews, and out-of-class conferences, which improved 'the think through' approach through the lens of a student, and instructor's reflexivity. Finally, it analyses that mentor incorporated the positional reflexivity of gaining factors from the teachers and students to have insight into students' performance issues. It gives more interpretations of power dynamics, challenges of student performance, transitioning to college, and establishes the mentor or instructors' goals, leading teaching assistants to have their class.

The reflective model also contends that teaching knowledge is categorized into the educational experience and theoretical. The knowledge gained by the experience is termed as reflection, which is reflected and applied under the personal knowledge of the educational theories (Lundgren and Poell, 2016). Further, this model also recognizes three different domains of knowledge applied that include teaching evaluation, instructional, curriculum, and pedagogical (Lundgren and Poell, 2016). The instructional knowledge describes teaching design, for example, classroom oral and visual lectures, use of technology, the material-based preparation process for the lecture, etc. The pedagogical knowledge describes how students learn, such as motivation lectures and learning style. It also teaches the use of knowledge in relation to the type of learning within the classroom. Lastly, curriculum knowledge describes individual knowledge of the courses, goals, and curriculum development and implementation rationales. Finally, it can be established that the mechanism of faculty's professional learning is linked to the outcomes of student learning (Saroyan and Trigwell, 2015). These contextual aspects of teaching knowledge are detrimental to critical reflection and premise belief responses.

4.4. Challenges and potentials for facilitating critical reflection for QU faculty:

The survey analysis identified the limitation that Qatar University's teaching faculty lacks the rudimentary understanding of the national reforms curbing the professional developmental measures. The sense of personal growth, collaborative teaching methodologies, and self-reflection are also limited in discourse among the teaching faculty (Nasser and Romanowski, 2011). Qatar higher education institutes promote digital literacy, technical Education, mobility of the educators for professional developments while incorporating the faculty training and student learning outcomes (Nasser, 2017). Teachers are more inclined towards mastering the

teaching methodologies rather than developing critical reflection processes and understanding the theoretical implications. In these aspects, technical competency, educational reforms, and diverse teaching methodologies are regarded as an educator's engagement objective. It can be said that realistic standards can achieve the longevity of educational reforms with realistic student-oriented transformational learning outcomes.

Professional development of the teaching faculty is necessary for student-oriented outcomes, as analysed by the reflective measures. The education faculty of Qatar Universities faces the challenges of resource deficiency in developing reflective skills (Sellheim and Weddle, 2015). The poor framework of the curriculum also compromises the learning goals and outcomes as a negative impact within this context.

4.5. Facilitations for critical reflective learning:

In this study and literature search, the role of critical self-reflection in terms of professional experience and learning abilities has been established as core elements of the educational outcomes. For example, several workshops, training, and organizational activities like electronic portfolio development and international teaching strategies can also benefit the educator's self-reflection (Jenson, 2011). The recommendations of Sabah and Du (2018) for institutional support identified that the faculty needs a deep understanding of student-centered learning (SCL) to become better believers and implementers of the learning system. Secondly, the autonomy of faculty members is needed for adapting to appropriate methods of teaching and assessment aligned with the pedagogical objectives of learning. The tailoring regarding the context of study with long-term effects can also enhance better outcomes. Thirdly, the inclusive approach within the faculty's evaluation criteria can help develop the sustainable, innovative pedagogy of the institute.

Course and curriculum development skills are also obtained in collaborative learning and structural changes (Sellheim and Weddle, 2015). In addition, a mutual and collaborative approach can promote the educator's critical thinking abilities.

5.1. Limitations

The limitations for this study identify the gaps and biases in the study methodology, analysis criteria, or sampling method aspects (Simon and Goes, 2013). These limitations and gaps are often not removable, but they still affect the study outcomes and conclusion within both quantitative and qualitative aspects. The current study is based on the theoretical implications of the survey studies under theoretical modelling of critical reflection. In addition, the study addresses the faculty engagement aspect in the critical reflection to achieve transformational learning. The study is also limited in reporting students' perceptions of learning outcomes regarding a specific teaching design. It can give a better student and teacher reflection while providing a complete image.

5.2. Recommendations

- Enhancing the teacher's role in Education through autonomy in the curriculum development, evaluation criteria, and individual class activities can provide positive outcomes (Beauchamp, 2015).
- Collaborative approaches of the institutional organization and sharing of information and teaching philosophies will enhance experimentally proved practices (Sellheim and Weddle, 2015).
- A deep understanding of the educators about student-teacher learning practices provides effective student-oriented outcomes (Sabah and Du, 2018).

Conclusion

This research is a mixed-method study that recruited the quantitative and qualitative aspects of research to formulate the research methodology. The research explores faculty engagement in critical reflection and transformational learning practices. The data for the exploratory study has been collected by survey analysis of the interview guide presented by Kreber and Cranton (2000). The proceeding survey and critical reflection will benefit teachers, educators, and prospective teachers to develop efficient learning strategies. The essential model of reflection using the three types of content, process, and premise reflection has been analysed. This study investigated three tire analyses starting from the analysis for the Qatar University's faculty engagement in the critical reflection. The three types of reflection identify the description of the problems, the process of problem-solving strategies, as well as presuppositions, and the beliefs of teachers for shaping the teaching ideologies.

Later the challenges and facilitators of critical reflection promotion have also been identified. The findings identified that Qatar University faculty members have little engagement with critical reflection and thinking abilities. They are instead more inclined towards achieving the optimal and efficient teaching methods. The theoretical implications suggest that critical reflection of the content, process, and premise have been identified as the most recognized tools regarding the transformation of learning. Finally, it addresses the gaps concerning faculty engagement with critical reflection in terms of teaching design, strategies, and evaluation of outcomes. The findings establish that critical thinking and reflection are complicated cognitive and social processes for individual analysis. Cognitive-based transformative learning promotes critical reflection. Qatar University faculty faces the limitations of resources and professional development when incorporating the model above of critical thinking in learning evolution. Moreover, this lag of local cognitive and social importance leads to the involvement of external objective programs.

References

1. Abu-Tineh, A.M. and Sadiq, H.M., 2018. Characteristics and models of effective professional development: the case of school teachers in Qatar, *Professional Development in Education*, 44(2), pp.311-322.
2. Adeyale, J.S. and Yusuff, Y.S., 2012. Effect of teaching method, choice of discipline,e and student-lecturer relationship on academic performance. *Journal of Economics and Sustainable Development*, 3(7), pp.1-7.
3. Ahmed, R.K.K., (2018) *Global Influences on Educational Plans in the Arab World: A Comparative Study of Egypt, Jordan, Qatar and Tunisia* (Master's thesis).
4. Al-Jaber, M.A. and Al-Ghamdi, S.G., 2020. Effect of virtual learning on delivering Education as part of the sustainable development goals in Qatar. *Energy Reports*, 6, pp.371-375.

5. Alvesson, M. and Sandberg, J., 2011. We are generating research questions through problematization. *Academy of management review*, 36(2), 247-271.
6. Azeng, T.F. and Yogo, T.U., 2015. Youth unemployment, Education and political instability: evidence from selected developing countries 1991-2009; households in *Conflict Network Working Paper*, 200.
7. Beauchamp, C., 2015. Reflection in teacher education: Issues emerging from a review of current literature. *Reflective practice*, 16(1), pp.123-141.
8. Christie, M., Carey, M., Robertson, A., and Grainger, P., 2015. Putting transformative learning theory into practice, *Australian Journal of adult learning*, 55(1), pp.9-30.
9. Ebadi, S. and Gheisari, N., 2016. The role of consciousness-raising through critical reflection in teachers' professional development: A sociocultural perspective. *Cogent Education*, 3(1), p.1147990.
10. Farrugia, P., Petrisor, B.A., Farrokhyar, F. and Bhandari, M., 2010. Research questions, hypotheses, and objectives. *Canadian journal of surgery*, 53(4), p.278.
11. Fleming, T., 2018. Mezirow and the theory of transformative learning. In *Critical theory and transformative learning* (pp. 120-136). IGI Global.
12. Gillett-Swan, J., 2017. The challenges of online learning: Supporting and engaging the isolated learner. *Journal of Learning Design*, 10(1), pp.20-30.
13. Hassen, T.B., 2020. The state of the knowledge-based economy in the Arab world: cases of Qatar and Lebanon, *EuroMed Journal of Business*.
14. Henry, J. and Bruland, H.H., 2010. We are educating Reflexive Practitioners: Casting Graduate Teaching Assistants as Mentors in First-Year Classrooms. *International Journal of Teaching and Learning in Higher Education*, 22(3), 308-319.
15. Husmann, P.R., and O'Loughlin, V.D., 2019. Another nail in the coffin for learning styles? There were disparities among undergraduate anatomy students' study strategies, class performance, and reported VARK learning techniques. *Anatomical sciences education*, 12(1), pp.6-19.
16. Jenson, J.D., 2011. Promoting Self-Regulation and Critical Reflection through Writing Students' Use of Electronic Portfolio, *International Journal of ePortfolio*, 1(1), pp.49-60.
17. Kirpalani, N., 2017. Developing self-reflective practices to improve teaching effectiveness. *Journal of Higher Education Theory and Practice*, 17(8), pp.73-80.
18. Liu, K., 2015. Critical reflection as a framework for transformative learning in teacher education, *Educational Review*, 67(2), pp.135-157.
19. Lom, B., 2012. Classroom activities: simple strategies to incorporate student-centered activities within undergraduate science lectures. *Journal of Undergraduate Neuroscience Education*, 11(1), p.A64.
20. Lom, B., 2012. Classroom activities: simple strategies to incorporate student-centered activities within undergraduate science lectures. *Journal of Undergraduate Neuroscience Education*, 11(1), p.A64.
21. Lundgren, H. and Poell, R.F., 2016. On critical reflection: A review of Mezirow's theory and its operationalization, *Human Resource Development Review*, 15(1), pp.3-28.
22. Mackey, A. and Bryfonski, L., 2018. Mixed methodology. *The Palgrave handbook of applied linguistics research methodology* (pp. 103-121). Palgrave Macmillan, London.
23. Mezirow, J., 2018) Transformative learning theory. In *Contemporary theories of learning* (pp. 114-128). Routledge.
24. Nasser, R. and Romanowski, M., 2011. Teacher perceptions of professional development in the context of national educational reform: the case of Qatar. *International journal of training and development*, 15(2), pp.158-168.
25. Nasser, R., 2017. Qatar's educational reform past and future: Challenges in teacher development, *Open Review of Educational Research*, 4(1), pp.1-19.
26. Rosenbusch, K., 2020. Technology intervention: rethinking the role of Education and faculty in the transformative digital environment. *Advances in Developing Human Resources*, 22(1), pp.87-101.
27. Sabah, S. and Du, X., 2018. University faculty's perceptions and practices of student-centered learning in Qatar: Alignment or gap? *Journal of Applied Research in Higher Education*.
28. Saroyan, A. and Trigwell, K., 2015. Higher education teachers' professional learning: Process and outcome. *Studies in educational evaluation*, 46, pp.92-101.

29. Schmohl, T., 2017. The research-education nexus: Basic premises and practical application of the "Scholarship "movement, *The Future of Education*, 7, pp.317-321.
30. Schnepfleitner, F.M. and Ferreira, M.P.M., 2021. A Leadership Development Programme: A Case Study of Transformative Learning in Qatar, *Educational Research for Social Change*, 10(2), pp.1-17.
31. Sellheim, D. and Weddle, M., 2015. Using a collaborative course reflection process to enhance faculty and curriculum development. *College Teaching*, 63(2), pp.52-61.
32. Simon, M.K. and Goes, J., 2013. Assumptions, limitations, delimitations, and scope of the study.
33. Taylor, E.W., 2017. Critical reflection and transformative learning: A critical review, *PAACE Journal of Lifelong Learning*, 26(2), pp.77-95.
34. Torff, B., 2006. Expert teachers' beliefs about the use of critical-thinking activities with high-and low-advantage learners. *Teacher Education Quarterly*, 33(2), pp.37-52.
35. Welch, D.J.A. and McDowall, J.J., 2010. A comparison of creative strategies in teaching undergraduate students in the visual arts and design. In *Proceedings of the 2010 Conference* (pp. 1-3).
36. Zguir, M.F., Dubis, S. and Koç, M., 2021. Embedding Education for Sustainable Development (ESD) and SDGs values in the curriculum: A comparative review on Qatar, Singapore, and New Zealand, *Journal of Cleaner Production*, 319, p.128534.

Appendix-1

	Curricular Knowledge	Pedagogical knowledge	Instructional knowledge
Content Reflection	What are the goals?	What do I know about how students learn and develop?	What teaching strategy should I use?
Process Reflection	Are these goals possible and feasible to reach?	How have I helped the students in reaching these goals?	How effective are these strategies in terms of reaching the goals?
Premise Reflection	Why are these goals important? Are they aligned with the overall outcomes of the educational program and needs for the profession and society? Are there any alternatives?	Why is it important to highlight what I have done to help the students? Are there any alternatives for my role?	Is this strategy the most appropriate way? Are there any alternatives?

Appendix-2

Interview guide derived from the scholarship of teaching model (Kreber, and Cranton 2000).

1. Question One (Reflection on Content within the domain of Instructional Knowledge)

- As you teach your course this term, did you give any thought to set up this course, along with what instructional strategies or approaches to use?
- Of the various things you mentioned, what do you consider the most important strategy or approach you to use? I will ask you to elaborate on that one a bit.

2. Question Two (Reflection on Process within the domain of Instructional Knowledge)

- What led you to make use of this method or approach?
- How did you learn that this would be effective?
- Can you think of something specific you do, or did that helped you learn that this is a good method or approach to use?

3. Question Three (Reflection on Premise within the domain of Instructional Knowledge)

- If someone said to you, I don't think it makes a difference whether or not you use the method or approach the instructor talked about, what would be your reaction?
- Have you ever explored or questioned whether this approach makes a difference in "how well you feel your courses go"?
- Have you ever explored alternatives?
- Can you think of anything that you did when you questioned if making use of it makes a difference?

4. Question Four (Reflection on Content within the domain of Pedagogical Knowledge)

- What do you know about how students learn?

5. Question Five (Reflection on Process within the domain of Pedagogical Knowledge)

- Considering the undergraduate course, you are presently teaching, how do you know that you are successful with helping your students learn?
- Can you think of anything you do to find out whether the way you facilitate your students' learning is effective?

6. Question Six (Reflection on Premise within the domain of Pedagogical Knowledge)

- Have you ever questioned whether the way you attempt to facilitate your students' learning makes a difference in how well they learn?

- Have you ever explored any alternatives?
- Can you think of anything that you did when you questioned whether it makes a difference that you facilitate your students' learning in this way?

7. Question Seven (Reflection on Content within the domain of Curricular Knowledge)

- What is/are the main goal(s) and purpose(s) of your teaching as you are teaching this course?

8. Question Eight (Reflection on Process within the domain of Curricular Knowledge)

- Can you think of something specific you do or did that helped you identify that this (these) should be the goal(s) or purpose(s)?
- How have the goals and purposes come about; have they changed or evolved?
- Can you think of anything specific you did or did to find out whether these goals or purposes needed to change?

9. Question Nine (Reflection on Premise within the domain of Curricular Knowledge)

- Have you ever critically reflected on whether the goals, purposes, and rationale you identified for your course make a difference in student learning?
 - Have you ever experimented with alternative goals? Can you think of anything that you did when you questioned whether the goals and purposes you selected make a difference to student learning?
 - As one goal was to identify whether individuals engaged in reflection on experience-based knowledge or research-based knowledge or both, we added the following questions for both process and premise reflection in each of the three knowledge domains.
- The example you have just given is a very good one. We would classify this as experience-based knowledge (or research-based knowledge, depending on what the person said).
 - Would you think you're learning (in the area described) is also informed by some theoretical, formal, research-based, or public/published knowledge about teaching (or your own teaching experience depending on what the person said earlier)? If so, how?

We also developed for each question additional probes to be used if needed.