

Stakeholder Perceptions on the Use and Value of Framework for a Team Approach in the Fourth Industrial Revolution Era at an Open Distance and e-Learning Institution

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Abstract

This single exploratory case study explored the perceptions of academic staff, electronic originators, and instructional designers of the Framework for a Team Approach (FTA) and their awareness of its value and application within the learning management system (LMS) in the context of the Fourth Industrial Revolution (4IR). This was done to determine the continued relevance of FTA to the changing technological environment, especially considering the demands of the 4IR. Instructional design (ID) processes are critical to the success of the academic project. A South African Open Distance and e-Learning (ODEL) institution, i.e. the University of South Africa (UNISA), applies an FTA to guide curriculum and learning development based on the Analyse, Design, Develop, Implement and Evaluate (ADDIE) approach to guide the ID processes. FTA was developed during the era of printed study guides as a teaching tool. However, with the advancement of technology propelled by the 4IR, UNISA decided to migrate all academic activities to the online platform. There is, therefore, a need to investigate the perceptions of academic staff, electronic originators, and instructional designers regarding the use of the FTA and its continued relevance in the evolving technological environment, given the shift in teaching mode at UNISA. Instructional designers, electronic originators and academic staff members involved in the ID process were purposively selected to participate in the research. Findings indicate that the framework remains generally still useful but requires minor adaptation to align with the changing context, especially considering the pressing demands of the 4IR. UNISA will be better informed about the perceptions surrounding the use of the FTA and its relevance to the demands of the 4IR.



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Introduction

This study explored the perceptions of academic staff, electronic originators, and instructional designers of the FTA and their awareness of its value and application within the LMS in the context of the 4IR. This was to determine the continued relevance of the FTA to the changing technological context of the 4IR. At the largest ODeL (UNISA), various policies have been developed and adopted to guide the academic project. The policies implied in this study are the Curriculum Policy, Tuition Policy, and Open Distance Learning (ODL) Policy. The FTA on curriculum and learning development was adopted in 2009 to implement the Tuition Policy.

FTA follows an industrial model. An industrial activity comprises various contributors, paralleling distance education, in which multiple participants contribute to designing and developing learning materials (Peters 2007). Likewise, UNISA's FTA recognises that the curriculum and learning development process involves several role-players contributing uniquely to the process and the final product. The framework was developed to provide guidelines for the role of each participant in the curriculum and learning development process.

UNISA's instructional design (ID) is part of the professional support services offered to academics by the Directorate for Curriculum Development and Transformation (DCDT) for curriculum development and delivery. This happens through FTA, emphasising the division of labour. To this effect, the ID processes require continuous adjustment to suit the context and technological developments, such as the 4IR, and how academics, electronic originations and instructional designers perceive the FTA. This supports the idea that "the constantly shifting landscape of education demands design that can grow and change with its context" (Sharif and Cho 2015,73). DCDT comprises the director, deputy directors, education consultants, and curriculum and learning specialists. The instructional designers are referred to as education consultants and curriculum and learning development specialists. The term "instructional designer" is adopted for this article as it is the preferred nomenclature in literature.

UNISA's FTA was developed when teaching and learning were primarily delivered in print, as electronic materials were limited. Given the 4IR's demands for technological savvy, there may be a limited institutional understanding of user perceptions of the utility of FTA in a new operating context, particularly among academics, who are the ultimate implementers of the FTA through the curriculum. The COVID-19 pandemic in early 2020 also exacerbated the issue; processes that largely relied on physical interaction among stakeholders had to be reviewed urgently to accommodate remote electronic interaction. Thus, this reported research established the users' discernment of

utility in the FTA, including their awareness of its value proposition and familiarity with its use.

The research questions being addressed are: What are the perceptions of academic staff, electronic originators, and instructional designers of the use and value of the FTA? How relevant is the FTA to the 4IR? The article describes instructional design, specifically the Analyse-Design-Develop-Implement-Evaluate (ADDIE) model, which frames the ID and the FTA. The research design is outlined and motivated. Thereafter, the research findings are presented and discussed.

Instructional Design

According to Carr-Chellman (2016), ID is the process by which instruction is created systematically by setting goals, creating learning objectives, analysing student characteristics, writing tests, selecting materials, developing activities, selecting media, and implementing and revising the lessons. Gustafson and Branch (2002,17) define ID as a system of procedures for developing education and training programmes consistently and reliably. Yet another definition is by Branch (2009,1), who states that “instructional design centres on individual learning, has immediate and long-range phases, is systematic, and uses a systems approach to knowledge and human learning.” These three definitions are relevant to the subject of discussion in this article, all of which purport to identify ID as a systematic process involved in educational instruction. All the elements of the system should function effectively to ensure the overall system operates efficiently. ID is a process within a system that requires following specific steps or procedures. Critically and within the context of this article, is the use of media for instructional purposes, which implies the technological tools that have advanced considerably in the era of the 4IR.

Peters (2007) uses four main characteristics of the industrialised system to compare industrialisation and distance education. These characteristics are used here to describe the ID processes. The most relevant characteristic is the division of labour. Moore and Kearsley (2012) use a systems approach to delineate the concept of division of labour. They present distance education as a system with various components comprising sub-systems. These components include learning, teaching, communication, design, and management (Moore and Kearsley, 2012). Each of these components consists of parts which combine into a sub-system. The ID sub-system and its components and processes are particularly relevant to this study. The subsystem enlists the participation of various role-players, including academic staff, instructional designers, librarians, language editors, administrators, graphic designers, electronic originators, critical readers, students, and many others. The FTA represents the process applied in ID at UNISA.

The second characteristic, regularisation, stems from the consecutive arrangement that the activities must follow. In industry, some activities along the production line can only happen after others have been concluded. This is also applicable in the FTA, which details the process flow for instructional design. The third characteristic is the

rationalisation of activities. The careful analysis of each activity, including the amount of time and resources allocated to each, is applicable in this context, with FTA providing guidelines concerning the activities involved in the design process. As the project manager, the instructional designer allocates time and resources to each activity as part of its rationalisation. The final characteristic is the application of technology to make the process efficient and effective. This characteristic applies to UNISA, where some activities are conducted digitally, such as transmitting learning materials among various role-players via email. The effective use of technology in the ID process forms the basis of this study.

The Analyse-Design-Develop-Implement-Evaluate Model

ID processes are based on the ADDIE approach, whose origin can be traced back to 1975 when Florida State University designed it for the United States Army. Bichelmeyer (2004,5) states, “ADDIE is a colloquial term used to describe a systematic approach to instructional design.” This approach consists of five steps, i.e., analysis, design, development, implementation and evaluation, which form the acronym ADDIE. Most recently, Charbonneau-Gowdy and Galdames (2021) added to this notion by stating that the five conceptual phases of ADDIE are often used to guide the design process and ensure program quality. Bichelmeyer (2004) contends that ADDIE can also be regarded as a conceptual framework for ID, or a mental frame of reference that loosely guides instructional designers towards systematically resolving ID problems. There is a consensus among some researchers that ADDIE is the foundational framework for many ID models (Bichelmeyer 2004; Chen 2011). While there are many ID models, the ADDIE approach is the basis for all of them and, thus, the most preferred one (Caplan and Graham 2008; Chen 2011; Nishé Farrell, Brunton and Costello 2022).

It is essential to follow the steps outlined in the ADDIE model. This means that all ID projects should begin with an analysis of the context and the learners, and end with an evaluation. Depending on the outcome of the evaluation, a review may be necessary or not. This means that the ADDIE approach provides continuous iterations intended to improve instruction and make it more effective. Figure 1 depicts a summary of the ADDIE approach.

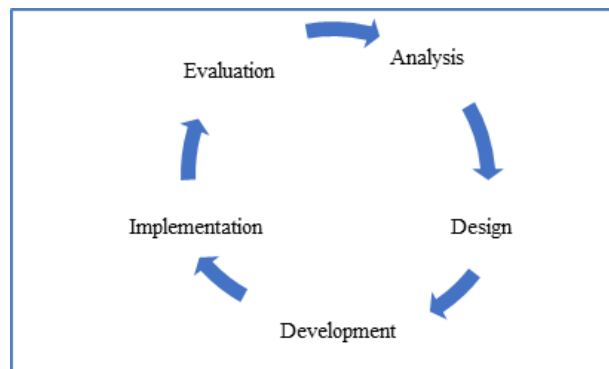


Figure 1: Illustration of the ADDIE approach

The FTA

UNISA, which provides the context for this study, has an approved policy on tuition that informs the framework within which the curriculum is designed, specifically the FTA, which is based on the ADDIE approach. It outlines the steps to be followed in the design process of both programmes and individual modules. It also lists the participants for each step of the process. The FTA consists of four distinct steps, as depicted in Table 1.

Table 1: Summary of the FTA

No.	Step	Activities
	Programme design	<ul style="list-style-type: none"> development of the purpose of the programme stating the intended outcomes outlining the structure of the programme
1	Curriculum planning of modules	<ul style="list-style-type: none"> making decisions about the content of each module ensuring that the modules are aligned and connected assessment and moderation strategies
2	Learning design	<ul style="list-style-type: none"> introduction of resources to facilitate learning and for student support
3	Learning development	<ul style="list-style-type: none"> generation of experiences production of any additional material consultation with other stakeholders on the draft materials

The FTA was first approved for use in 2007 and reviewed in 2013 following feedback from various stakeholders. This was well before the advent of the 4IR. Therefore, there is a need to establish the perceptions of academics, electronic originators, and instructional designers of the FTA and their awareness of its value and use within the LMS in the era of the 4IR. Another observable characteristic of the FTA is that it outlines the steps and role-players in the ID process in precise, logical, and almost clinical terms, aligning it with industrial processes. One element that compromises the successful implementation of the FTA is time. In its current format, the FTA requires at least a year and a half to design and develop a single module successfully. This is not always possible, and modules tend to be designed, developed, or reviewed within eight months due to circumstances that dictate the shortening of the time.

The next section describes the methods used to conduct the study and explains their application.

Research Design

Owing to the focus of this study on the ID function within a specific context in response to a broader context of the 4IR, a single exploratory case study was adopted, focusing on one context and one phenomenon (ID processes in the form of the FTA). The study targeted participants involved in designing and developing learning materials at UNISA, who are instructional designers, electronic originators, and academic staff. Firstly, 36 instructional designers housed in the DCDT perform the ID and development roles, as well as project management for the development projects. Secondly, there are 36 electronic originators responsible for assisting the academic staff and the instructional designers with the design and development of module sites. Lastly, over 2 000 academic staff members are the custodians of course development, providing content and methodology. Not all staff members have been involved in module design and development, adhering to specified FTA processes. The study focused on individuals who had previously designed and developed modules using the FTA.

This study applied purposive sampling among the different participant groupings because “purposive sampling is used when researchers wish to target certain individuals with characteristics of interest in the study” (Turner 2020, 10). Seven participants were identified among the instructional designers, as case studies often involve small samples (Marshall 1996,523). Instructional designers, as the project leaders and the custodians of the FTA, were selected based on their experience in the role. Only those with more than five years’ experience were selected for participation because, in purposive sampling, only “those individuals or objects that will yield the most information about the topic under investigation” (Leedy and Ormrod 2015,279) are selected. Five electronic originators were also selected based on their experience and expertise. Furthermore, the study selected five academic staff members from the College of Education (CEDU) and five from the College of Economic and Management Sciences (CEMS). Individual semi-structured interviews were conducted with each of the selected 22 participants to allow them to provide as much information as possible. The interviews began with an open question and became more focused as they progressed.

Due to restrictions on movement and meetings resulting from the COVID-19 pandemic context, interviews were conducted via electronic media. For this reason, the Microsoft Teams (MS Teams) platform was chosen due to its ease of use and accessibility for staff members and students. Another advantage of the MS Teams platform is that the transcription is transmitted as the interview unfolds. Roberts, Pavlakis and Richards (2021,3) note that “virtual work may afford participants and researchers greater privacy while maintaining physical safety; participants can choose not to use video or apply a virtual background.” This approach is supported by Oliffe et al. (2021), who assert that some of the many benefits of using a virtual platform are a reduction in travel costs, participants being freer to speak from a familiar environment, and the exclusion of the awkwardness that arises from physical meetings.

The collected data was analysed using Atlas.ti version 22. It was used to code the data according to themes because its use in coding material in electronic document format enhanced the efficiency and effectiveness of this process in several ways (Wickham and Woods 2005).

The analysis performed on the data generated through the above methods yielded the findings presented in the section below.

Findings

Several themes emerged from the analysis of the data. These covered the participants' views and understanding of the FTA and stakeholder involvement, the benefits of the FTA in module design and development, its continued relevance in the 4IR era, and recommendations for its improvement, if any.

Participants' Understanding of the FTA

The academics' understanding of the FTA is critical for its successful implementation within the LMS and 4IR context. Hence, first and foremost, we were interested in the participants' understanding of the FTA because it would teach us about their execution of it. Most participants demonstrated a good understanding of the FTA and its intended purpose. It was seen as an important framework guiding the qualification or module design and development: "the FTA is the vehicle that takes us through the process of qualification design and module design. The very essence of the various steps of the FTA proposes how it used to be done" (P5). This view of the FTA was crystallised by P7, who stated that the FTA is a guidepost, and P13, who said that the FTA is a "sort of consultative framework that gives guidelines for how you go about designing programmes."

Working as a team in the FTA is critical as this framework involves various role-players. Thus, the participants factored team effort into the task and defined the FTA from that perspective; for example, P16 mentioned that the *FTA* "refers to a team working together to develop a module." The team effort was spotlighted as the critical element of the FTA, as it was intended to guide the roles of the various stakeholders in the ID process, "team approach where the lectures, the people from the DCDT, the educational consultant form a team where they discuss the study material before it can start being developed for printing (P9); there are various experts in various fields, and they must all collaborate to deliver an end product" (P19).

There was an appreciation of the FTA, from when the participants had no or limited knowledge of it since its inception, to now having a better understanding. P22 revealed his obliviousness about the FTA and the team approach within it; "I had no idea what that was." He, however, stated that after listening to what the FTA entails, he conceded: "I didn't know that we had a formal framework put in place. I think it's good to have." This participant's thinking changed as he credited it as a guiding framework. P11 also

revealed her ignorance prior to learning more about the FTA, stating that she was not fully knowledgeable about it: “I’ve always known about the framework, and I didn’t know what it all entails.” This finding suggests that the participants initially had a limited understanding of the FTA, but their understanding evolved as they gained knowledge about it.

The stakeholders and role-players in the FTA are identified according to the needs of each project. The framework outlines the stages where each role-player is involved in the process, making it easy to apply. Regarding this, P8 had views about the composition of the team and the contributions of the various role-players: “They come together from the different departments on the project team, and everybody is held equally accountable for the quality and success of the project to achieve a shared goal. And everybody knows exactly what they should be doing.” However, P2 expressed an opposing view that suggested that the FTA did not provide clear guidelines on each team member’s role: “We also mention the various stakeholders that must be there. One of the grey areas is not having listed particular aspects that the role players must play, and that also led into, I mean, at times, some form of competition, some form of nonpartisan to say, no, but I was just listed here. I don’t know my role, and I don’t know my purpose. So, I think we should have expanded it a little bit more.” This was exacerbated by an unclear stakeholder role in the process, to the extent that P6 thought some were irrelevant: “I sometimes find that of all the stakeholders that are prescribed in the FTA, some of them are pretty irrelevant” (P6).

Benefits of the FTA

The participants’ understanding and appreciation of the FTA contributed to their positive views about it, despite some level of criticism they expressed, especially regarding the role-players. They emphasised the value of interacting with others in a team as an enrichment of self and the process. For instance, P8 stated that their horizons are broadened when they follow and work within the FTA: “It embodies trust, and you appreciate the different frames of thinking, and it encourages unity” (P8). There was also a view that working with others in a team alleviated the workload of each role-player because the work is spread among the team members. For instance, “I think it’s good to have. Well, because if you are gonna be working alone, I mean, like, that’s a lot of work. If you are gonna work with other people, then it means it reduces the workload on your side” (P22). P5 agreed with the notion that teamwork helped to lighten individual workloads, “the FTA helps with being structured, and it provides direction and, in a way, it provides some relief working with other people” (P5).

An essential contribution of the FTA to the academic project is its role as an additional quality measure. Participants indicated that working with others in a team provided an additional layer of quality assurance. Considering this, P13 stated: “I do believe that it’s important for lecturers to work in consultation. Also, it creates another level of quality and standardisation in terms of departments knowing that they’ve done the right thing.” Though the FTA was generally viewed positively, some participants criticised it. The

findings revealed that only some people favoured the idea of teamwork. Some preferred to work alone on projects. A view was expressed that “interpersonal conflict also arises, and some people might piggyback on others” (P8). This view contradicts the importance of teamwork required in the FTA. Working in a team requires a team leader whose responsibility, among others, is to manage the interpersonal relations of team members to achieve the common goal.

The FTA’s Relevance to the 4IR

The FTA’s relevance to the 4IR and the participants’ views about it are the crux of the findings of this study. The general view was that the FTA was still relevant to the 4IR. For instance, “I think it is still relevant, and we can't do without it” (P19). Team effort resurfaced as a critical matter in this relevance. This participant suggested that “there’s definitely still a need for the team approach, but maybe we must add the layer of new technologies across all facets of the team approach.”

The FTA was perceived as a pillar in the ID process for collaboration, cooperation and teamwork. P15 stated the following in this regard: “I think no man is an island, and we’re a huge ship, so I don’t think you can work out of a team approach in all the different facets from qualification, conceptualisation, all the way through to the finalisation of your material.”

Some participants believed that the FTA was more relevant in the current online context. Since UNISA is an ODeL institution, academics should be familiar with designing online teaching materials. “I think the FTA is even more relevant now because people don't know how to design for online, and they need help with designing for online, and they need help with designing assessments. So, the FTA is definitely relevant there” (P21). Further support for its relevance was voiced by P6, who was satisfied with it but at the same time suggested that it needed some revision, “it's well grounded, it needs revision at the moment, but it’s still well-grounded, a framework from our curriculum policy.”

Other participants, however, pointed out the diminishing relevance of the FTA to the technological environment. This view was also evident in the data detailing the various stakeholders and role-players in the FTA process. The data suggested that the framework was developed with the printed study material in mind. For instance, P1 stated that “the issue of team members and stakeholders becomes even more important. I think, with technology, you know, the more you involve technology because you're gonna need more stakeholders, more parties coming to the design to help.”

Participants’ Recommendations to the FTA

To bring the FTA even more relevant to the online environment, a few participants made recommendations for its review. Linked to what P6 intimated about some of the role-

players being irrelevant, a recommendation was made to revise the workflow to ensure that the various role-players feature at the right process stages. P3 proposed as follows:

What could change, though, could perhaps be the stages; because of the technological infusion, we might like to tweak a little bit of the stages and how they happen. Because we have too many role players that are feeding into the system and that might actually affect some of the workflows.

Considering the current era of the 4IR, the data suggest that the role-players might need to be revised, as some of those mentioned in the FTA are no longer relevant to the current technological environment. P11 expressed a concern about the terminology for the role-players, “I don't know where we fall, because they talk about the technical team, which is web editors and graphic designers. So, I don't know what they mean by web editors” (P11). An electronic originator, P12, was displeased with the point at which they became involved in the ID process, i.e., at the project's tail end. His view was that they should start with the project and interact with other role-players from the beginning to make their contribution effective and valuable:

I think I should actually be in the beginning, but unfortunately this is how it works. I'm the last step and it's a problem because if, let's just say for instance, I get a study guide now and it's wrong, it must go back to language services. And when it goes back to language services, it's another process. And between language services and me, there are other people involved. Because before the job comes to my table, it must go through planning, coordination, and all these other people.

There was another view about the composition of the team, that it had to comprise relevant role-players to “help with advice and practical technological skills. If we're going to eventually be involving things like, you know, gaming or even virtual reality or things like that, we're gonna need more technical people, and I don't think we've got enough” (P1).

The participants noted that the FTA originated from ADDIE, but its application needed improvement. The shortcoming was that it covered only some of the five steps of the ADDIE. They felt that their roles tended to end at the development stage, leaving them in the dark about the product's success that they had helped to develop. P6 stated thus in this regard: “The FTA is based on the ADDIE model and the ADDIE model has the I for implementation and the E for evaluation, but we tend to stop at the D, the second D. We don't do the I and the E, which means we do half the job.” They recommended that instructional designers be involved in the background during implementation and evaluation to provide a comprehensive picture of their role, in line with the ADDIE approach. A further recommendation was to leverage the technological environment by reducing its reliance on face-to-face interactions among the various stakeholders. This would save time and other resources, “perhaps how it works might change a little bit, sort of face-to-face meetings or engagements, we now doing them online and forms that are filled in might be, collated in a different app or whatever the story is. Reporting

might be using smart data” (P15). A further recommendation was the use of smart data as a tool for reporting. To this effect, P3 supported the need to use technology to expedite various activities in the instructional design process, “if we had a system that is meant mainly as a project management tool, for facilitating those kinds of formalities online, we would cut on the downstream problems of having to wait for the CoD and the author to sign or the critical reader to be appointed.” It was observed that “the FTA is process-based, sometimes linear, but also multifaceted in nature” (P3). Therefore, it was recommended that this concern be addressed. “But I do think that maybe we should stress more the need for iteration. There needs to be this constant iteration between the steps” (P1).

Discussion of Findings

The participants described their roles in the ID processes, demonstrating the team approach and its strengths and shortcomings. This links directly to the definition of design as presupposing “multiple working steps carried out by several people” (Seel, Lehmann, Blumschein, and Podilskiy 2017,7). The data demonstrates that the various role-players have clearly defined roles in the process, following Moore and Kearsley’s (2012) functional components, i.e. learning, teaching, communication, design and management. However, it emerged that the electronic originators’ role was becoming compromised in the online dispensation. This suggests a review of the FTA to clarify the roles, particularly for electronic originators.

The data further suggests that there is a shortcoming in the evaluation step of the ADDIE. Emphasis was placed on the role of evaluation in the iterative nature of ID processes. The ADDIE approach is criticised in the literature for its rigidity and linear format (Seel et al. 2017). However, there are hardly any negative views about the ADDIE from the data.

UNISA’s ID processes appear solid as deduced from the data. There may be a need to review the FTA slightly to address the separation of roles in the process, thereby avoiding overlaps and gaps. The data emphasises, however, that the FTA is still relevant to the current ID environment.

Conclusion

The data on the FTA suggests that there are divergent views among participants about its value and continued relevance in the changing technological environment, specifically the 4IR. However, the majority view is that the FTA is still important and should be maintained. However, some shortcomings are emerging due to the changing technological environment, with consequent suggestions and recommendations for adjustments to the framework in response to these changes. The dissenting view is held by a very small minority. The essence of the FTA, as indicated by the data, is that ID is a process that a single individual cannot efficiently complete. It requires participation

by various role-players, each bringing their expertise to the process to enrich the final product. The premise of the FTA is that teams tend to be volatile when not properly managed. Role clarification becomes critical in the FTA. The framework endeavours to manage the team by guiding the specific contributions from various role-players. The study contributes to the perceptions surrounding the use of the FTA, stakeholder roles and the FTA's relevance to the demands of the 4IR.

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