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Instructional Design

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COMPARISON BETWEEN KEMP, SMITH & RAGAN, DICK & CAREY'S INSTRUCTIONAL DESIGN MODELS

Instructional design (ID) is systematic way of suggesting a structure and giving meaning to an instructional problem by helping to visualize the problem and breaking into discrete and manageable units. In addition, ID is a systematic reflective process of applying instructional principles into plans by material, activity, resources and evaluation (Smith & Ragan, 2004; Morrison, Ross & Kemp, 2001). It is based on what is known about learning theories, management methods, systematic analysis and information technology. Also the importance is that an instructional design approach makes the expert construct the instruction from learners' perspectives instead of traditional education approach such as perspective of content. Therefore, the main elements of an instructional process should be learners, objectives, method and evaluation. Where are we going? , how will we get there? and how will we know when we have arrived? are three major questions that instructional designers should ask themselves.

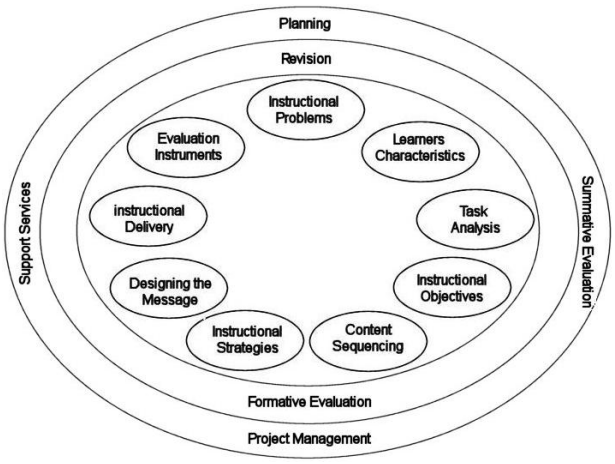

Figure 1. Kemp's ID model

For instruction, Jerrold E. Kemp uses an oval model. The model includes instructional problem, learner characteristics, task analysis, instructional objectives, content, instructional

strategies, message design, development of instruction, evaluation instruments, and support services. The outer ovals depict the feedback opportunity in which changes in content or elements during development are allowed. In this perspective Kemp tries to show that an instructional design must not have a specific starting point. The designer can start the process with any circle but should continue with clockwise direction. Whatever sequence seems to be logical or suitable for the target instruction, the user should follow it. This model also provides flexibility rather than indicating a sequential or linear order with lines. Also it gives to user the idea that some situations should not need or require one of the parts. Then the part can be disregarded. It can be called as element friendly. On the other hand, the treatment in one aspect may affect the other parts in the sequence. Decisions or change in one part requires the adaptation or revising in other remaining circles through the direction. In addition, this shape is a continuous implementation/evaluation cycle model with the help of constant planning, design, development and assessment to protect effective instruction.

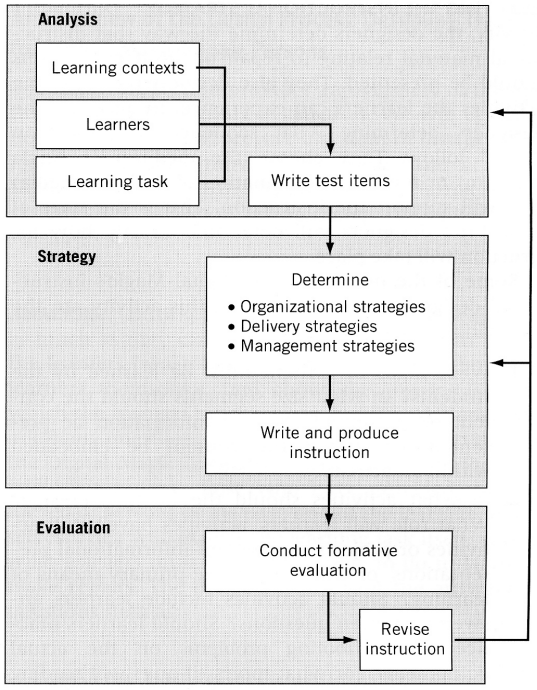

Figure 2. Smith and Ragan's ID Model

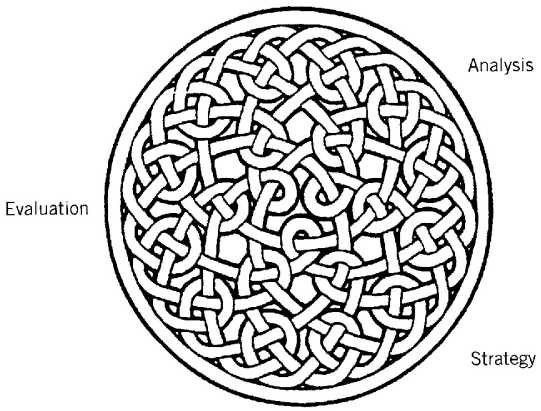

Figure 3. Concurrency Model

According to Figure 2 above, their model is based on systems-oriented approach (Christopher, 2011). To clarify its framework, it should be possible to mention about system and its orientation. Generally, a system can be defined as a set of discrete elements which interact to reach a particular goal and each system is a coherent and indivisible whole. So, system approach is defined as a method to provide people who work in complex situations to describe and analyse complexities and to find dysfunctions in the system. Shortly, people might look at problems from a broader perspective in order to solve them in system approaches. As stated by the historical perspective, It was used to develop large weapon systems by military in 1950s as the first time (Dick, 1986); the approach was influenced by Systems theory, Systems analysis and System engineering; military, business and industry are largest users of this theory; and it was used and discussed by school managers as a kind of administrative and organizational theory (Ornstein & Hunkins, 2004). Hence, this approach can be applied to many educational areas due to its features of total quality management.

On the other hand, it can be said that this model rely on the implication of Robert M. Gagne's learning theory work with Patricia L. Smith and Tillman J. Ragan (SR)'s philosophy even though they are also affected by theory from Mager, Merril and Reigeluth (Christopher, 2011). They define their model as a common one and some researchers describe it as prescriptive model. Even if its working parts are depicted as in Figure 2, SR stress that to understand the model from deep to overall perspective, Figure 3 should be considered. Since, one of their goals are to show the fact that changes in one step contribute designer team to make alteration in other steps. They indicate that steps in each phase, such as analysis and assessment, instructional strategy, implementation, management and evaluation, are interlinked. The Figure 3 gives us the simplification of design process.

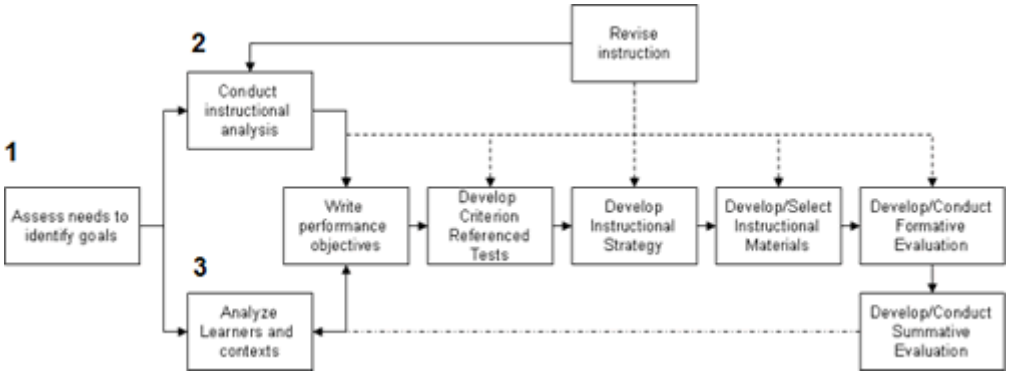

Figure 4. Dick and Carey's ID Model

Walter Dick and Lou Carey (DC)'s philosophical idea on their model is based on an eclectic set of views such as behaviourist, cognitivist and constructivist. Because they mention that these views adopted and adapted as appropriate amount for the varieties of learners, learning outcomes, learning context and performance contexts (Dick & Carey, 2005). They are against instruction to be sum of isolated parts because they see instruction as an entire system and support the inter relationship between context, content, learning and instruction. They try to suppose that to reach the students' learning outcomes, components of system such as learner, instructor, equipment, instructional activity, transfer system, learning and performance environments should work together in harmony. According to Figure 4, goals are written from needs or "performance" analysis, students entry behaviours are determined from instructional analysis, learners current skill, preference and attitude and at the same time feature of instructional setting are controlled. Performance objectives are written and assessment tools parallel to objectives are developed. Also after instructional strategy determination, materials such as videotape, module or hypermedia format are selected. Three types of formative evaluation suggested are small-group, field-trial and one-to-one evaluation. Finally, revision of instruction if necessary and summative evaluation is followed respectively (Dick & Carey, 2005).

Similarities and differences between three basic models:

At first glimpse, SR's model seems to be linear order due to lines. Sequentiality issue is included. But totally, it also behaves as concurrency model in Figure 3. In terms of similarities and differences, similar steps are analysis of learner characteristics to show up need of learners, task analysis, context analysis and sequencing. Instructional strategy can overlap with organizational strategy, message design with delivery strategy and instructional delivery with production of instruction in SR's model. Finally revision and formative evaluation are common in each model. However, while Kemp begin the process with problem identification, SR starts with context. We can infer that Kemp's focus is problem based approach while the other one is more content based. Kemp gives importance to instructional objective more than SR because specific time is given to objective analysis like spreading over time whereas in SR it is absorbed in analysis step time. So, content analysis and sequencing is forefront in SR diagram. Instructional strategy, message design and produce of instructional strategy are in the middle time of the process that's why there are similarities between them. On the contrary, one of the strength of SR model is to give worth on management so that it lies on the strategy part of the process. It can be inferred that it is one of the indicator which is adopted with system theory. Kemp lag behind because he suggests to focus on planning, project management after formative evaluation.

For another similarity we can mention that both of them highlight revision, formative evaluation after analysis of former steps. Nonetheless, while Kemp sees summative evaluation as requirement, SR does not share it in the model. As a follower of system approach, it is surprising that SR does not focus on support services or resources issue seen in Kemp's oval diagram. SR leave writing test items after learner and task analysis, nevertheless Kemp leave it through the end in the light of instructional delivery.

What are the things encapsulated in DC's model but not in Kemp and SR's models? Although DC model is based on system theory like SR, it was not modelled as isolated parts of instruction process. It is believed that whole is more valuable than pieces. Furthermore, it is the first time students' attitudes, preferences, entry behaviours are thought. This can be strength of the model. However, there is a sequence, linearity and dashes in DC model. It is not as flexible as Kemp's. Another crucial issue discussed is that the word "performance" blinds us. Type of formative evaluation and referring it again and again remarks the powerful feature of the model.

Finally, Kemp's model central focus is on learner's need and goals. Also support and services are considered. Especially it can be useful for small scale tasks and individual lessons. However, SR's model is beneficial for entire course or curriculum for developing large amount of instruction. As a difference, there is a detailed treatment of instructional strategies. Christopher (2011) indicates that Smith and Ragan's model rely on condition based theory which means that different learning outcome category requires different inner cognitive development activity. Learning outcome is based on learning hierarchy and different learning consequence needs different external condition. This view separates SR model from others. DC model has detail process for analysis and evaluation but more general description for instructional strategy. Moreover, the important terms seen in DC's model are performance analysis, three types of formative evaluation which is highly related with their proposed eclectic philosophy.

To conclude, Smith and Ragan (2004; as cited in Christopher, 2011) point out that any one ID model is not dominant over another. They offer the users a mental framework and way or path to find his/her own model creation.

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