

Instructional Development Model Critique

-PIE model by Newby, Stepich, Lehman, & Russell-

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Introduction

When cooking a dish, we need a detailed recipe if we are unfamiliar with the dish. However, we may not need to see a recipe if we have much experience in cooking the particular dish. Newby., Stepich, Lehman, & Russell (2000) made an analogy to the cook's use of recipe to introduce the concept of instructional design.

They provide a set of questions to the learner and the instructor for each phase of learning which consists of plan, implement, and evaluate; it illustrates the phases of both learning and instruction. The use of instructional media and methods are stressed in this model in that they assist student-centered learning. The model is intended to assist teachers to plan their instruction, and the authors perceive teachers as instruction experts.

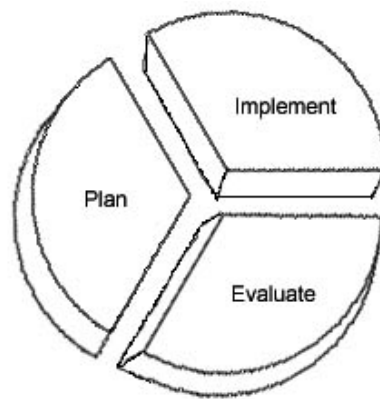


Figure 1. Plan, Implement, and Evaluate. The Phases of Learning (Newby., Stepich, Lehman, & Russell, 2000, p.8)

The planning phase is to plan and prepare the course. It includes reviewing resources and analyzing environment. They also select instructional methods and strategies in this phase. Emphasis is put on how to select media according to the appropriate instructional methods. Very detailed checklist is provided to help teachers choose the right media.

Implementation phase is to prepare for learning experiences **and** integrate methods and media. The 4 Ps of preparation and presentation, which is **prepare instructional materials, prepare learning environment, prepare learners, and proceed with the lesson,** are involved in implementation phase to provide learning experiences with the students.

In evaluation phase, teachers evaluate both of student learning and the overall effectiveness, efficiency, and appeal of the instruction.

The authors stresses that PIE presents heuristic guidelines in that it offers “general rules that you can adapt to fit each situation, rather than a rigid procedure that you must follow in the same way every time.” (Newby et al, 2000, p.81) Although the authors

introduce each phase in particular orders, they do not focus on the process but stress the components of each phase. I believe such characteristics make this model very useful for teachers in that they have more authority while they are implementing their instruction; they can adjust their planned instruction according to the interaction.

Taxonomy

Gustafson and Branch (2002) categorized ID models into three categories such as classroom oriented, product oriented, and systems oriented according to its focus of development. PIE model is classified as classroom oriented model; it is clearly stated that this PIE framework is for pre-service and in-service teachers to plan their instruction. (2000)

Table 1. *Characteristics of PIE Model Based on the Taxonomy* (table adapted from Gustafson, K. L., & Branch, R., 2002, p.14)

| Selected characteristics | PIE model |
|---|---|
| Typical Output | Typical output may be instruction, which is often called lesson, or be supporting materials for their instruction. In most cases, teachers plan their instructions based on one or more lessons. The model also introduces ways to attain instructional materials which support their instruction (whether they are selected or created) within the framework of PIE. |
| Resources Committed to Development | PIE addresses resources to select or modify the materials rather than to develop a new material. It is assumed that resources committed to development are low compared to the resources of existing materials. |
| Team or Individual Effort | Although there is no explicit statement regarding this, it is assumed that PIE is based on individuals' work. |
| ID Skill/ Experience | There may be experienced teachers and novice teachers based on their teaching experiences. The teachers may not familiar with the term of instructional design, but it is assumed that experienced teachers have competencies to design instruction in that PIE provides general guidelines rather than specific steps which allows for teachers intuition. |
| Emphasis on Development or Selection | It is assumed that classroom-oriented models have emphasis on rather selection than development. Although there is no explicit emphasis made on selection in PIE model, the authors recommend for the teachers to |

| | |
|---|---|
| | analyze the existing materials first for efficiency. However, it is not the focus whether to select existing materials or create a new one. Rather, it is stressed to identify right media for appropriate instructional methods to achieve the intended outcome. |
| Amount of Front-End Analysis/ Needs assessment | Less emphasis is on front-end analysis than other models. Although the planning phase involves needs analysis, it is addressed that there is no determined starting point. Teachers may initiate the planning process from where they need to start. |
| Technological Complexity of Delivery Media | Although the authors allot many spaces to introduce how to integrate technology into their instruction, the level of complexity of introduced ways of technological application is low. |
| Amount of Tryout and Revision | On-going evaluation is stressed throughout the entire process of learning and instruction. Revision can be made more than often in that teachers are plan as well as deliver the lesson. |
| Amount of Distribution/ Dissemination | Amount of distribution or dissemination is limited to the teacher's classes or the teachers' community where the teacher who originally plans the instruction belongs to. |

Comparison to ADDIE

Molenda (2003) discusses the origin of the terminology of ADDIE paradigm. Although it is not evident where the term is originated, ADDIE is considered “an umbrella term, and then to go on to elaborate more fully fleshed-out models and narrative descriptions.” (Molenda, 2003, p.36) Also, Gustafson and Branch (2002) identify ADDIE as a conceptual framework for ID models. In this respect, it is meaningful to compare PIE model to ADDIE paradigm. In order to compare specific components of each process, a table of ADDIE components by R. Branch (Branch, R, personal communication, March 2007) is adapted in table 1.

The first three phases of analysis, design, and development are integrated into the planning phase of PIE. While ADDIE focuses on gap analysis and task analysis in its analysis and design phase, PIE inexplicitly embraces such characteristics. That is, gap analysis is less emphasized and doesn't have to be the starting point of their planning phase. PIE provides more flexibility to the teachers so that they can decide on the starting point. (e.g. decide on the content first). In addition, it concentrates on selecting instructional methods and media for the planned activities. Since the designer is going to implement the instruction in PIE, most part of the planning phase is as for how implement the instruction. Ongoing evaluation is also emphasized in PIE as in ADDIE.

Table 2 shows the components of each phase in PIE and ADDIE.

Table 2. *Comparison of PIE to ADDIE* (components of ADDIE adapted from Robert B. personal communication, 2007)

| | | PIE | ADDIE | |
|-------------------|---|---|---|---|
| COMPONENTS | Plan | <ul style="list-style-type: none"> • Identifying characteristics of the students • Specifying objectives • Describing the learning environment • Developing instructional activities: <ul style="list-style-type: none"> -Motivation activities, -Orientation activities, -Information activities, -Application activities, -Evaluation activities • Selecting methods and media • Acquiring instructional materials (select/modify/create) | Analyze | <ol style="list-style-type: none"> 1. Assess performance 2. Determine instructional goals 3. Analyze learners 4. Audit available resources 5. Determine potential delivery systems (including cost estimate) 6. Compose a project management plan |
| | | | Design | <ol style="list-style-type: none"> 7. Conduct a task inventory 8. Compose performance objectives 9. Generate testing strategies 10. Calculate return on investment |
| | | | Develop | <ol style="list-style-type: none"> 11. Generate instructional strategies 12. Select or develop media 13. Develop guides for the student 14. Develop guides for the teacher 15. Conduct formative revisions 16. Conduct a Pilot Test |
| | Implement | <ul style="list-style-type: none"> • Prepare instructional materials • Prepare learning environment • Prepare learners • Proceed with the lesson | Implement | <ol style="list-style-type: none"> 17. Prepare the teacher 18. Prepare the student |
| Evaluate | <ul style="list-style-type: none"> • Evaluate learning and instruction <ul style="list-style-type: none"> -Before -During -After | Evaluate | <ol style="list-style-type: none"> 19. Determine evaluation criteria 20. Select evaluation tools 21. Conduct evaluations | |

Conclusion

As aforementioned in introduction, PIE represents the phases of learning and instruction and provides guidelines to designing classroom instruction. It is notable that PIE consider both experiences of students and teachers. The author used the same framework for learning and instruction, so that the learners also can benefit from the model and engage in learning more actively.

Also, it overcomes the criticism of the ID models that it limits the intuition by providing predetermined instruction. Edmonds, G.S., Branch, R.C. & Mukherjee, P. (1994) suggest that soft-system based model works well with the teachers considering their knowledge and experience in a specific context; PIE is based on soft-system by providing heuristic approach.

References

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