課綱為本課程設計經驗之研究：以國中教師為對象

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1. 前言

採用「課程標準」來設計課程方案是全世界的教育趨勢，而教師使用課綱設計課程的能力則將是我國課程發展的趨勢和十二年國教改革能成功的重要保障。課綱是國民教育課程的濃縮，是學校教育的源頭和內涵，是學校教育校準的方向，是國家社會對國民教育的期望所做出的完整定義，也是國民教育所必須的一環(Colby, 2017)。

相關文獻指出，以課綱為導向思考教學時，教師能脫離教科書的框限，轉而聚焦在學生的需求與學習成果上進行課程設計(Cho & Trent, 2005)；另外，透過聚焦在課程標準和個別學生需求上的教學操作，學生學習成效和態度比傳統課程的學習成效反映出顯著的差異(Kahle, Meece, & Scantlebury, 2000；Riordan & Noyce, 2001)。類似以上諸多研究證據的報導已促使美國各級學校採用課綱作為課程、教學與評量的方向、引導和結構，同時提供學齡孩子一致性、安全性和品質管制的國民教育(Nagel, 2015)。

反觀我國的教育現場，教師雖長期受到使用教科書為課程的傳統思維影響，但近二十年來，在教師專業裡已有呈現不同層次課綱使用的程度，例如，文獻上已有使用課綱在教學設計或計畫的事例，例如師培教師在教授社會教材教法時，嘗試讓職前教師結合教科書與課綱進行主題式課程統整的發展與設計（錢富美，2008），自然教師以課綱為引導選

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用教科書(劉新、張永達，2003)。此外，文獻也有教師使用課綱在課程發展與設計的報導。例如，呂秀蓮(2017)在《課綱使用的理論和實例》一書中，記載一所偏鄉國中以課綱導向設計課程的研習成果使垂危的校本課程轉為永續可行的案例。該書同時報導一位教師使用課綱發展設計課程與教學，突破教科書的限制，轉而選用以學生為本的教材。然而，儘管東西方均有課綱為本課程設計的相關文獻，但在教師學習課綱導向課程設計的經驗方面報導，則相對上顯得稀少。

2. 研究方法

為回應以上情況，本研究以 10 名自願參加的兩所國中教師為對象，針對他們以課綱為本設計課程的經驗進行研究。這些國中教師接受一系列四天以 UBD 作為主要架構，進行為時共計 32 小時的課綱為本課程設計工作坊培訓。考慮我國教師的專業理解和課程改革的素養課程目標，本研究調整 UBD 模式，增加「解構課綱」逆向步驟，包括內容研究和透過多面向概念歸納技術確認核心概念，和一些名稱內涵的調整。例如，以「學習目標」、「學習評量」、「學習活動」分別取代「預期結果」、「評量證據」和「行動計劃」。另外，以概念為主的「持久概念」(呂秀蓮，2019)、素養取向的「表現任務」和建構表現任務基礎能力的「檢驗點評量」分別取代以理解為主的「持久理解」、能力取向的「實作任務」和「其他證據」，並增加「反思與修正」的評量項目(呂秀蓮，2018)。表 1 是工作坊的研習行程及課程內容。

表 1. 工作坊的研習行程及課程內容

研習日程	研習主題	課程內容
第一天	階段一 訂立學習目標	課綱為本課程發展設計簡介、解構課綱、訂立學習目標和反思分享
第二天	階段二 設計學習評量	學習評量概論、表現任務、檢驗點評量、反思與修正機會和反思分享
第三天	階段三 發展學習活動	學習活動概論、滾動校正階段一&二、設計學習活動和反思分享

第四天	反思與修正 成果發表	綜合問題解決、單元課程成品修正、成果發表和反思分享

引導此研究的問題有三:(1)國中教師以課綱為本建構學習目標之學習經驗如何？(2)國中教師以課綱為本確認學習評量之學習經驗如何？(3)國中教師以課綱為本發展學習活動之學習經驗如何？

研究資料包括田野觀察紀錄、非正式訪談、小組學習反思、單元課程設計成品和半結構式的個別訪談等多種類別，讓資料間訊息得以交叉比對，進行三角檢證，確認資料的可信度。資料分析採用持續比對法，研究者先就一套資料尋找有意義訊息，進行有意義的文字分塊、編碼，繼而將所有編碼訊息分類組、比較、修正，再就所有類組資料進行主題的建立(Corbin & Strauss，2007；Creswell，2006; 2012；Gay & Airasian，2008)。隨後，各套資料依前述方法持續進行訊息分塊、編碼、分組、比較、修正和分類的循環分析模式，最終產出分類的主題。

3. 研究結果

資料分析結果顯示，階段一建構學習目標的經驗中，教師在多方努力下已產出學習目標；再者，教師發現這經驗讓他們看見解構課綱內涵是能建構出學習目標的關鍵工作，也幫助他們跳脫教科書框架的教學思考模式，以及過程中遇到諸多的困難，雖感受痛苦但最終卻有成就感。

階段二設計學習評量的學習經驗中，雖然老師認為設計學習評量並不容易，但九位教師最終仍產出表現任務。教師認為表現任務結合學習成果和真實生活，能引起學習動機和產出學習成效；他們同時發現設計表現任務的難易程度跟學科屬性相關聯，跟生活相關的科目如藝術、綜合等，較容易設計，但語文和數學科目則顯得困難。他們發現能檢測表現任務學習目標達成的標準評量表是客觀、有效的證據收集工具。

階段三發展學習活動之學習經驗中，教師認為學習活動的發展設計，是最容易的部分。教師發現在學習目標的引導下，必須反覆檢驗各階段的內容，並使用 WHERE TO 來架構教學設計，因此對學習活動的設計和使用，已跳脫教師灌輸知識的傳統模式，而有不同於以往的思維邏輯。

4. 本研究的重要性

綜整課綱為本課程設計之研習經驗可發現，國中教師感受到各階段的學習困難度呈現持續遞減的現象：學習目標的建構最困難，學習評量的設計較順手，而學習活動的發展最容易。這可能是因為解構課綱內涵和建構學習目標，是一項需要高度專業抽象思考的過程，也不是教師的思考模式。根據改變理論(Fullan,1993)，模式轉化是與傳統習性進行反向操作，是在認知系統、技能和行為各方面挑戰全新、不熟悉的領域，所以是極為艱難的改變歷程。由此可知，課程設計模式的轉變必須先通過教師專業認知信念系統的改變，才有專業技能和行為隨之改變的可能產生。改變理論可以解釋為何階段一的研習過程是專業轉化的過程，是艱難、痛苦的過程，也是必經的專業成長過程。

課綱為本課程設計之過程中，令人印象深刻的發現是在階段一解構課綱內涵和確立學習目標時教師所體驗到學習之苦。持續校準課綱和學習目標是課綱為本課程設計所有階段重複出現的重要概念：第一階段時強調課綱內涵是建構學習目標的關鍵；第二階段強調表現任務檢測學習目標的達成；第三階段強調發展學習活動須緊扣前面階段的設計跟課綱。由此可知，找出課綱內涵和確立學習目標雖是最困難的步驟，卻是課綱為本課程設計成功與否的最關鍵步驟，也是促成國民教育正常化和教師基礎專業能力養成不可或缺的一環。為解決這個不可或缺的問題，相較於 UBD (Wiggins & McTighe, 2008) 採用概念取得的教學技術，讓教師在示例中進行歸納式的理解，並從內容主題中找到可建立學習目標的通則，本研究中教師的操作步驟是從課綱的選擇開始，進行關鍵詞的內容研究，隨後再透過多面向概念歸納技術，進而訂立單元課程的學習目標。然而從研究結果看來，對國中教師而言，這種操作模式仍顯得困難，印證文獻所載的，課程設計過程中幾乎所有教師都經歷到掙扎(Cho & Trent, 2005)。慶幸的是，當國中教師專注於課程內涵的發現和概念收斂的同時，他們開始對教育現場所使用的課程產生專業反思和批判，認知到如果不使用課綱、只使用既有教材的教學模式，將難以回應學生的需求。這是教師專業上的一大突破，雖不容易卻將提升教師的

專業門檻，使教師的專業難以被非專業者所取代（Freidson, 1970)。

關鍵詞：課綱為本、課程設計、課綱使用、學習目標、學習評量

Standards-based Unit Design: The Experiences of Middle School Teachers

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1. Introduction and Relevant Literature

Using curriculum standards to design units is an educational trend in the world. Teachers' ability to design units based on standards will be the trend of unit development in Taiwan and key to the success of the 12-year basic education reform. In a sense, curriculum standards are the condensed version of the national education curriculum, the source and connotation of school education, the direction of school education calibration, the complete definition of national and social expectations of national education, and a necessary part of national education (Colby, 2017).

Relevant literature indicates that teachers can break away from the constraints of textbooks and instead focus on student's needs and learning outcomes when thinking about teaching based on standards (Cho & Trent, 2005). Additionally, when teachers focus on standards and individual student needs, student learning outcomes and attitudes exhibit significant differences compared to traditional curriculum learning (Kahle, Meece, & Scantlebury, 2000; Riordan & Noyce, 2001). Tremendous amounts of similar research evidence have urged American schools at all levels to adopt curriculum standards as the direction, guidance, and structure of units, instruction, and assessment, which provides school-aged children with consistent, safe, and quality-controlled national education (Nagel, 2015).

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Back to Taiwan's educational reality, although teachers have long been using textbooks as curriculum, which generates problems facing curriculum reforms, there have been different cases of applying standards reported in the past two decades. For example, there was a case of a teacher educator requiring pre-service teachers to link textbooks and standards in developing and designing a thematic unit (Chian, 2008) and another case of some science teachers selecting textbooks based on standards (Liu & Chiang, 2003). Additionally, other literature reports regarding teachers using standards in unit design. For example, Lu (2017), in her book Notions and Examples of Standards Use, reports a case regarding the results of a series of workshops on a standards-based unit design that transformed a vanishing school-based curriculum into a sustainable and feasible one. Lu (2017) also presented how a teacher designed and taught a unit based on standards, breaking through the boundaries of textbooks and using student-centered teaching materials. However, although there is relevant literature on standards-based curriculum design in both the East and the West, reports on teachers' experiences in learning standards-based curriculum design are relatively sparse.

2. Methodology

To resolve the above problem, the study recruited 10 volunteered middle-school teachers from two schools as participants and explored their experiences designing units based on standards. These teachers were trained in a series of four-day standards-based unit design workshops with Understanding by Design (UBD; Wiggins & McTighe, 2006; 2008) as the main framework for unit design for a total of 32 hours. Considering teachers' professional understanding and the competency objectives of curriculum reform in Taiwan, this study modified the UBD model by adding steps of deconstructing the standards, such as doing content research, identifying core concepts using a multi-faceted concept induction technology, and adjusting the connotation of some terminologies. Specifically, the study employed learning objectives, learning assessments, and learning activities to replace desired outcomes, assessment evidence, and action plan respectively. In addition, the study utilized the concept-based longstanding concept, the

competency-based competency task and other assessments (Lu, 2019) to replace the understanding-based enduring understanding, the ability-oriented performance task, and other evidence. Finally, the study added an item of reflection and revision (Lu, 2018). See Table 1 for the workshop itinerary and content.

Table 1: Workshop Itinerary and Course Content

Schedule	*Theme*	*Content*
Day 1	*Phase 1 Establishing learning objectives*	*Introduction to standards-based unit design, deconstructing the standards, establishing learning objectives, and reflecting and sharing*
Day 2	*Phase 2 Designing learning assessments*	*Introduction to learning assessments, competency task and rubrics, other assessments, reflection and revision, and reflecting and sharing*
Day 3	*Phase 3 Developing learning activities*	*Introduction to learning activities, revisions of phases 1 & 2, developing learning activities*
Day 4	*Reflection, revision, and sharing*	*Problem-solving, revision of finished unit, presenting works and reflecting and sharing*

Research questions guiding this study were as follows: (1) What are middle-school teachers' learning experiences in establishing learning objectives based on standards? (2) What are middle-school teachers' learning experiences in designing learning assessments based on standards? (3) What are middle-school teachers' learning experiences in developing learning activities based on standards?

Data sources included field notes, informal interviews, group work reflections, finished units, and semi-structured individual interviews that allowed cross-comparison of information, triangulation verification, and confirmation of the credibility of the materials. The constant comparison method was adopted for

data analysis. The researcher first identified meaningful information off a set of data, chunked meaningful text segmentation and coding, and then compared, classified, and revised all the coded information (Corbin et al. & Strauss, 2007; Creswell, 2006; 2012; Gay & Airasian, 2008). Subsequently, the researcher underwent a cyclical analysis of the above steps for each data set and finally established themes.

3. Results

The results indicated that in Phase 1, teachers established learning objectives via tremendous efforts and realized that the process of deconstructing standards is key to establishing learning objectives. This experience helped them break the teach-by-the-book thinking mode, where they achieved a sense of accomplishment.

In Phase 2, although teachers did not think it was easy to design learning assessments, nine out of the ten eventually finished drafting competency tasks with rubrics. Teachers believed real-life situated competency tasks with learning results can motivate students and generate positive learning outcomes. They learned that rubrics used to distinguish achievement of learning goals on competency tasks are objective and effective evidence-gathering tools. However, they seldom mentioned other assessments or reflection and revision.

In Phase 3, teachers considered developing learning activities the easiest phase. Teachers found that to align with learning objectives, they had to check back and forth repeatedly when developing each phase. They used "where to" to structure instructional design and realized that the experiences of developing learning activities had driven them to adopt a new thinking mode that enabled them to move away from the traditional practice of infusing knowledge.

4. Scholarly Significance of the Study

The significance of the study is that the degrees of hardship middle-school teachers experience at each phase when developing unit lessons were identified. The participating teachers observed that the process was a continuous decrease of struggles, with establishing learning objectives being the most struggling, designing learning assessments being relatively easy, and developing learning

activities being the easiest. This may be because deconstructing standards and establishing learning objectives is a process that requires highly specialized abstract thinking, not a usual practice teachers perform in the classroom daily. According to the theory of change (Fullan, 1993), model transformation is a reverse operation with traditional habits. It is a challenging process as it challenges new and unfamiliar territory in all aspects of cognitive systems, skills, and behavior. Therefore, it may be understood from this that the transformation of the unit design model must first pass through the change of teachers' professional cognitive belief system, and then change the professional skills and behaviors accordingly. The change theory may explain why the learning process of Phase 1 is a difficult and agonizing yet necessary professional transformation process for teachers.

An important perception recurring in all phases is teachers' continuous calibration of standards and learning objectives, with the first phase emphasizing the standards being key to establishing learning objectives; the second phase using competency tasks to detect the achievement of learning objectives; the third phase developing learning activities to follow the design of the previous phases closely. The participating teachers recognized that, although identifying the core concepts of standards and establishing learning objectives in phase 1 was the most difficult, it was the most critical part of successfully designing standards-based units and the most indispensable part of normalizing national education and developing teachers' fundamental professional competency. To address this predictable impediment, UBD (Wiggins & McTighe, 2008) adopts a concept-acquisition technique that allows teachers to make inductive understandings in examples and find general principles from content themes to establish learning objectives. In this study, on the other hand, the teachers started by selecting standards, conducting content research on keywords, identifying core concepts through a multi-faceted concept induction technology, and then establishing learning objectives. However, the results indicate that the process is still challenging for middle-school teachers, which confirms the literature that almost all teachers experience struggles in the

unit design process (Cho & Trent, 2005). Fortunately, when middle-school teachers focus on the discovery of standard connotation and conceptual conjunction, they begin to reflect professionally on the curriculum used in the classrooms and realize that, if they do not use standards, it will be difficult for them to respond to the needs of students. This is a significant breakthrough in Taiwan's teaching profession. It is not easy, but it may help raise the professional threshold and make it difficult for teachers to be replaced by non-professionals (Freidson, 1970).

Keywords: ***standards-based, curriculum design, the use of curriculum standards, learning objectives, learning assessments***