Educational Resource Management

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Educational organizations and their environment

In this chapter we will:

- introduce a framework for analysing resource management in education and set this within an open systems model of inputs, processes and outputs/outcomes
- distinguish between educational outputs and outcomes
- outline some of the underlying considerations in decision-making for acquiring human and physical resources for schools and colleges
- show how such management operates differently in centralized and decentralized educational systems
- outline the budget management cycle as a framework for decision-making.

Educational resource management is a fascinating area of study because there is such a wide variety of practice, not only between developed and developing countries but also between countries that have similar living standards. The importance a country attaches to education is reflected in the proportion of the Gross Domestic Product (GDP) it spends on primary and secondary education. In 2017 the Organisation for Co-operation and Economic Development (OECD, 2018) average was 3.2 per cent, varying between 1.8 per cent in Russia and 4.7 per cent in Costa Rica. The OECD annual publication is a rich source of information on all aspects of resource use in different countries.
Countries also differ in the proportion of their education budget they allocate to the major sectors: pre-school, primary, secondary, tertiary and higher education. They differ too in the relative importance they place on public and private funding of education and in the roles that public and private sector institutions play in providing education. Further differences arise in the relative amounts that are allocated to the various types of educational resources, such as teachers, support staff, learning materials, computer and other equipment, and buildings.

All of us are faced with limited resources, and this is particularly so for educational institutions, especially those in developing countries where public sources of funding are very limited and even poor parents are often required to pay school fees. It is therefore imperative that educational organizations manage their finances and resources efficiently in order to secure the maximum learning benefit for students. While teachers and parents generally have no doubts that extra spending, more resources and smaller classes produce better results, the academic research on this issue has not confirmed these beliefs unequivocally (Levačić and Vignoles, 2002) and researchers disagree about the effects of resources on learning as explored by Schleicher (2019) in an investigation of the international PISA (Programmes for International Student Assessment) results. Apart from problems of data and methods, one important reason for this disagreement is that the efficiency of educational organizations varies. So, if resources are not managed efficiently, an increase in spending does not necessarily mean an increase in student learning.

A framework: input–output systems

Education is essentially a close relationship between the teacher and the students, and between the school or college and its local environment. This relationship is sometimes called an ‘open system’ because the educational organization is subject to influences from the environment, or context, within which it functions. Within the external environment, the organization functions as an input–output system in which internal processes link the inputs to the final production of outputs. There are three main elements in this input–output model:

- the external environment from which the school or college derives its raw material of students, acquires its other resources and to whom it supplies the outputs
• the processes that take place within the organization, known as the production technology
• the human relations system that forms a bridge between the external environment and the organization and which affects the way in which educational production is undertaken.

Because of the emphasis on the external environment (or context) and processes, this way of thinking about the educational organization is referred to as the context–input–process–output model (Scheerens, 1999).

The external environment within which organizations operate is influenced by a number of forces. Organizational theorists (for example, Butler, 1991; Vidovich and Currie, 2011) often distinguish between the general environment and the task environment. The former is the combination of major technological, social, political and economic forces that influence educational policy. These can include natural disasters (earthquakes, droughts, etc.), societal upheavals (revolutions, coups etc.) and wars, including civil wars. Some of these may be seen as more readily related to developing countries, but in some cases, such as the global pandemic of 2020, every single nation and its educational system is affected dramatically. In 2020, virtually all schools, colleges and universities were closed for an indefinite period, resulting in huge educational and financial implications. It is all the more important therefore that educational leaders and administrators are conversant with key principles that they can apply even in such extreme circumstances or when things return to normality following such events.

The task environment, sometimes called the specific environment, comprises all the local influences that impact directly upon the school, including parents, the local community, and central and local government. Together these constitute the stakeholders of a school or college. Butler (1991) argues that in order to survive, the organization should pursue ends that broadly meet the needs of its stakeholders. This is because they exchange the inputs or resources – usually through fees, grants or local taxes – for the outputs that come from the activity. Applying Butler, within the general environment education has to compete with health, defence and other objectives to secure funding for resources. At the task-environment level there has to be a relationship with the local community to top up the resources and to offer actual and moral support. The ability of the local community to do this also depends upon a variety of factors, including the inhibiting or motivating effect of external regulation at both general and task levels.
Inputs or resources are obtained from the external environment and are used to support and create learning activities for students. Schools and colleges may receive both financial resources – that is, money – and real resources. For real resources, a distinction is made between human (i.e. all the people employed in a school or college) and physical resources (i.e. all those items necessary for the process of teaching and learning and pupil support). The most important of the real resources or inputs is staff: teachers, support staff and managers/leaders. Other key real inputs are buildings and infrastructure, equipment and learning materials, such as books. When a public sector school or college is allocated a budget by its funding authority, it is allocated financial resources that it uses to purchase real resources. In a very centralized system, schools and colleges receive all their resources in kind – that is, real resources are directly allocated. In decentralized finance systems, schools and colleges are allocated most or part of their resources in the form of finance. However, even in the most decentralized of school systems, such as England, state schools receive their buildings in kind and do not purchase them (apart from new capital works) or pay rent.

The model shown in Figure 1.1 shows the educational process results in outputs and outcomes. These are the products of education systems. Outputs are the more immediate and measurable gains from education. At an individual level, outputs are examination achievement, sports team participation, degree results and many other personal gains. At an institutional level, these are the basis for league tables of results, and at the national level, aggregated data gives a picture of overall levels of mathematical, linguistic and scientific attainments that are used for comparison with chronological age, social deprivation or other criteria for longitudinal or international comparison.

Outcomes are the longer lasting and more general results of educational experience. At the individual level, they are seen in the balance of competence and confidence that enables participation in higher levels of employment, and social and community integration. At a national level, outcomes are reflected in levels of employment, crime rates, various forms of deprivation, psychological welfare and many other factors. These all contribute to public well-being and lead to the assertion that education is fundamental to national well-being.

The essential relationship is that between resources or inputs and the consequent learning achieved by students. In a survey of resource allocation in developing countries, Harber and Davies (2002) show that basic lack of resources, local ineptitude, low staff pay and corruption inhibit good-quality education. They report excessive pupil–teacher
ratios (often over 100:1); lack of pens, pencils and basic textbooks; poorly paid and often underqualified staff; and inadequate buildings. This contrasts with national and international expectations of the role of education in securing economic and social improvement through education for all. Akareem and Hossain (2016), in a study of universities in Bangladesh, show that perceptions of success in higher education reflect the socio-economic background of students – also seen as inputs, although this is difficult to quantify.

Figure 1.1: An educational organization as an open system. Source: Levačić, 2000: 11.

The conversion of resources into educational outputs and outcomes is depicted in Figure 1.1 as a progression from acquiring resources from the external environment, using these to support and create processes within the school in which teaching and learning takes place in order to produce educational outputs and outcomes for students. This is affected variously by the tension between central and local, or institutional, self-management. Local control over the use of resources is dependent upon the framework within which the school or college exists, the availability of resources to support activity and the nature of those competing for support. Accountability requires that state-funded schools should demonstrate that they are able to use resources efficiently and effectively, a recurring theme. Production technology cannot be applied efficiently unless schools and colleges know what they want to achieve, look at the ways in which they can do so, evaluate the methods available for the educational process and then move to implement plans. This goes alongside the management of resources through:
• the translation of the financial resources via the budget into real resources (i.e. human and material)
• the management of real resources so as to create and maintain the learning environment
• the deployment of the resources acquired directly for learning to support teaching and learning (Levačić, 1997: 132).

Resource and financial management

As already mentioned, in many systems, schools, and less often universities, are allocated real resources (i.e. buildings, teachers) in kind. Elsewhere educational organizations are allocated a global budget, expressed in money terms, from which they must purchase real resources. When a school or college has a delegated budget, a major responsibility of management is how to spend the budget to best effect in order to achieve the organization’s educational aims. There is an increasing tendency for educational organizations to be given a major degree of financial autonomy. It is argued that this will ensure that spending is related to local need and, in political terms, will hold the organization accountable for the funds devolved for its use.

Accountability takes many forms. In essence it involves some way in which those to whom financial resources have been delegated have to explain how, why and to what effect these resources have been used. In general, the greater the autonomy in decision-making for resource management, the more the organization, through its management and leadership, has to account for its stewardship. Those decisions affect both human and physical resources; we will return to them as we look at the detail of the budget process. Put at its simplest, resource management is about converting the inputs into outputs. What are the important considerations in doing this?

Staff selection, training and management

Human resources vary in quality. No two teachers bring exactly the same qualities to the classroom. Some are superb teachers but may be poor administrators; others may be less inspired teachers but have excellent class control and offer considerable pastoral support gifts. To some degree this variation is related to personality and innate abilities, but it can also be influenced by the person’s initial education and subsequent training and experience. There has been a considerable move to
enhance the consistency of human resource quality by using job and task analysis to identify the necessary competencies required in teaching or educational administration and leadership. Emphasis has also been placed on the development of training to meet identified competencies and the furthering of assessment to ensure that, as near as possible, two people of similar background and experience are equally capable of fulfilling their teaching role. Thus, resource management involves leaders in schools and colleges ensuring that adequate continuing professional development takes place so that human resources are developed to meet changing needs. National policy can have important effects on human resources through, for example, state regulation of the quality of initial and in-service training available to teachers and other staff.

Determining the relative division between human and physical resources

In most developed countries the ratio of spending is approximately 80 per cent on human resources and 20 per cent on physical resources, although this is subject to enormous variation. Issues of class size, class ability grouping, number and quality of support staff within the classroom and the school as an entirety, and the use of computer technology, textbooks and other materials of instruction all require senior managers to estimate potential costs. The distinction between human and physical resources may not be as straightforward as it seems. A set of science textbooks is clearly a physical resource; so too is work by a maintenance contractor, but the development of a programme of self-supported learning draws upon both the physical resources (in the purchase of paper for the materials) and also human resources (emanating from the teacher who undertook the work of preparing the course). Senior managers then have to ascertain the contributions to enhanced outcomes if different combinations of human and physical resources are used.

Core and non-core activities

Core activities are those that have to be maintained if the school or college is to fulfil national or local requirements. These might include specific curriculum delivery, and learning objectives. Additionally, though, educational organizations have varying degrees of freedom to offer non-core activities, including subject areas (for example, with music specialism) or opportunities to others who wish to use resources (for example, for adult or community education). Non-core activities may
attract potential pupils or adult users (with the possibility of additional fee income), but the examination result outputs from core activities may be the ‘league tables’ by which the school is judged. Decision-making may require achieving a balance in fulfilling these differing objectives.

Current and capital expenditure

We shall return to look at this issue in depth, but at this point it is important to recognize that leaders may face making decisions relating to expenditure on capital resources, generally buildings and major items of equipment, and current resources used for the immediate work of classroom teaching. Where schools are poorly funded, there is a tendency for decision-making to be based on the need to have teachers in front of students and, as a result, there may be inadequate funds for the purchase of materials of instruction. Decisions aimed at reducing staff numbers to ensure properly equipping a science laboratory, for example, may be influenced by union power and parental reaction.

Centralized and decentralized financial allocation systems

To a great extent decision-making is also affected by the way in which the allocation of funds to the school or college is controlled. In broad terms we can differentiate between centralized and decentralized systems. Here we are concerned mainly with the distribution of decision-making power over resources to different levels, but we should bear in mind that the degree of centralization or decentralization can vary considerably in other domains of decision-making, such as curriculum, school evaluation, admissions, and regulating qualifications for education staff. In centralized systems all decisions with regard to the domain in question are made by a central authority and applied to all institutions, with limited opportunity for decision-making at the local level. In such systems, accountability for the outcomes from the allocation and use of resources remains with the central authority. In decentralized systems, there are varying degrees of autonomy in decision-making at the local level. Generally the finance is allocated to operational level and then resource decisions are taken within the school or college, subject to varying levels of guidance. However, decentralized systems reflect varying degrees of autonomy according to the powers and resource opportunities that have been delegated.
Three forms of decentralization are defined:

**Deconcentration.** This occurs when the central authority creates its own regional or local administrative units, or a specialized functional unit, and delegates specific decisions to these units (Hanson, 1998, De Grauwe et al., 2005). For example, in France in the 1980s the Ministry of Education deconcentrated the administration of primary and secondary education to 28 regional offices headed by central government appointees (Daun, 2004). Deconcentration brings decision-making closer to the clients of the service but does not involve local democratic participation in decisions. Authority, however, is usually retained at the centre. Mestry and Bischoff (2009: 11) use the term ‘decentralization’ to convey the use of deconcentration to strengthen local democracy.

**Delegation.** This is the transfer of decision-making responsibility from a higher-level to a lower-level authority, for example, from central to local government or to schools, but the transfer of power is not permanent: it can be revoked by the higher authority and returned to it if it so wishes. Delegation increases local autonomy and permits greater efficiency in meeting local needs, but usually within central guidelines or constraints. Local units are typically made accountable to the centre as well as to local clients. Popescu (2011) points to the problems arising from varied interpretation of central policies, and inconsistency of their application, when moved to local institutions.

**Devolution.** This permanently transfers decision-making power from a higher- to a lower-level authority and so allows considerable local accountability and local autonomy. Resources are allocated to the local level with freedom to develop strategies and policies within broad frameworks. As a result, there are opportunities for enhanced allocative efficiency but the systems operating locally could well be inefficient and productive efficiency therefore lower. To meet such problems UNESCO (2017) has given guidance based on the need for support for stakeholders to use funds effectively, to recognize and share responsibility for decision making with the community and to foster understanding of investment for improvement.
This is a somewhat simplistic analysis, but it does highlight the need for balance between accountability and autonomy at central or local level and, within that, the optimization of resource use according to local need. When schools and colleges work within a devolved or delegated system, this is often referred to as ‘autonomy’. While this means that the school or college has allocated funds and freedom for resource decision-making, there are constraints, for example, in defining targets for outcomes or in allocating additional funding for specific use within tight frameworks. Caldwell’s definition makes clear the balance of freedoms and constraints:

A self-managing school is a school in a system of education to which there has been decentralised a significant amount of authority and responsibility to make decisions related to the allocation of resources within a centrally determined framework of goals, policies, standards and accountabilities. (Caldwell, 2002: 35)

Decision-making for schools and colleges takes place within a system determined by the decentralization of function (for example, employment of staff) and decentralization of organization level (for example, at local or district level, or at school or college level). Eurydice, an information network for the European Union, analysed the complexity of decentralization of educational funding in Europe in 2001 and showed the great variation in decentralization, both of function and organization. Systems are complex: for example, in French-speaking Belgium all funding and decision-making regarding teaching, staff resources, buildings and equipment is taken at governmental level only, but decisions regarding teaching equipment are funded by the municipality, with further decision-making within the funds devolved to school level. Table 1.1 illustrates this complexity for two other countries.

In some centralized systems, allocating staff and providing teaching and learning resources is organized entirely by central or regional government. In some systems, teachers are allocated to schools by a central staffing office; in others, only the responsibility for funding staffing is centrally held, and appointments are made at regional or school level; while in yet other systems, the central authority allocates a basic number of staff but then allows the school to purchase and appoint additional staff from its delegated resources. Similarly, it is common for schools in decentralized systems to be required to provide a certain basic staffing, or to follow curriculum guidelines. Thus, although these are examples of an apparently delegated responsibility, they have statutory
force and cannot be ignored. Such a system ensures that schools with delegated resource functions act within national or local guidelines.

**Table 1.1:** Comparison of funding and decision-making for education in Austria and Portugal

<table>
<thead>
<tr>
<th>Element</th>
<th>Austria</th>
<th>Portugual</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Funded by</td>
<td>Decisions by</td>
</tr>
<tr>
<td>Teaching staff</td>
<td>Central govt.</td>
<td>Regional govt.</td>
</tr>
<tr>
<td>Non-teaching staff</td>
<td>Municipality</td>
<td>Municipality</td>
</tr>
<tr>
<td>Maintenance</td>
<td>Central and regional govt.</td>
<td>Headteacher</td>
</tr>
<tr>
<td>Books and materials</td>
<td>Municipality</td>
<td>Headteacher</td>
</tr>
<tr>
<td>School meals</td>
<td>Municipality</td>
<td>Municipality</td>
</tr>
<tr>
<td>Transport</td>
<td>Central social fund</td>
<td>Central social fund</td>
</tr>
</tbody>
</table>

*From 2019 (formerly school council). Source: compiled by the authors.

Resources for new buildings are frequently allocated by central government, but plans are regionally implemented. School transport is also frequently centrally funded but regionally planned to avoid problems of over-provision. In short, the two elements of resourcing schools and colleges – funding and implementation – have been part of a complex system. There are increasing pressures for implementation to be devolved to the lowest possible level so that accountability is rendered to the community being served.

An organization can be placed on a continuum between total centralization and total decentralization for all its resources. The differences are seen in the decentralization of provision and control of the following items:

- buildings
- buildings maintenance
• teaching staff
• administrative staff
• non-teaching support staff
• administrative services, for example, telephone, computer technology
• non-teaching equipment
• teaching equipment
• books
• stationery.

There is also a great variation in the number of levels of control. Some countries settle policy at national level and then delegate issues of resource allocation to districts; some delegate all educational matters to district authorities, while others delegate educational organization to the local district. Within the local district there are then varying requirements for resource allocation to be further delegated to the school. The systems are complex and the implications for resource management considerable because it is not simply a matter of allowing schools the freedom to act independently but also requiring that they function within the strictures of a given accountability framework. This framework may control the entire educational enterprise including governance, vision and objective setting, curriculum organization and control, quality assurance systems and staff development.

Resource allocation is the mediating process through which all these function. At an institutional level it may affect the levels of staffing, the replacement of poorer buildings, the acquisition of teaching equipment and many other factors. The impact is felt not only by individual pupils but also by the school, the community at large, and ultimately impacts upon the national picture. The way in which resources are used may be more effective in some schools or higher education departments than in others, especially if published tables of achievements in public examinations are used as a guide to schools’ effectiveness. The effect of this is that some institutions may appear to be more attractive to potential students or, more likely, their parents, and as a result they may grow. If national resourcing is devolved on a per capita basis then successful schools attract more funds and can appear to be favoured. Meanwhile, schools that are declining will lose funds – this may be a spur to improvement or the signal for yet further decline.

In a study of the decentralization of education in Japan, Muta (2000) points to other national contextual factors that affect resource allocation. His views have been further supported by Ikawa (2008), who highlights
the tensions between central and local administration and the need for a greater local understanding of the purposes of decentralization. In the 1980s there were pressures in Japan, with its highly centralized and hierarchical organization of education, to move from a closed, overly standardized and inward-looking system towards one that would encourage personnel development and creativity and compensate for the ‘excessive concentration on Tokyo’. The need for change was exacerbated by the declining urban birth rate, which offered opportunities for institutional competition. Regulations were relaxed to abolish the appointment-approval system, formerly exercised by prefecture superintendents; to establish greater school autonomy; to establish local standards for class size; and to distinguish between instructions and orders, and guidance and advice. Local autonomy has increased and curricular and organizational freedom has been more fully exploited according to local need. However, as deregulation has progressed, educational gaps between schools and areas have widened, the pupil roll – and hence income – of the less successful schools has fallen, staffing ratios have worsened and the intended creativity has been stifled because of the need to conform to national government attainment targets. Resource allocation is now being more tightly controlled at national and local level in an attempt to support those schools that are apparently less successful because of the nature of their socio-economic context. It is hoped that supplementary funding will enable all schools to be effective by compensating for the effects of underfunding where pupil numbers are declining.

The budgetary cycle

Most financial and resource management is determined through the operation of the budgetary cycle. This offers a framework for the various processes that lead to the systematic management of resources.

There are four main phases in the budget management cycle:

- generating the budget by obtaining resources
- allocating (planning) the budget for the following year (or several years)
- implementing the budget plan through financial control procedures
- evaluating the use of the budget so as to improve decision-making in the future.
Budget generation

The initial, generation, stage is for the organization to recognize just what financial support it will have in the coming period (usually one year). It is essential for most organizations to obtain resources from the external environment. As we shall see in the next chapter, generating income can be problematic, especially where national or district instability leads to fluctuations in the public funds that are available for use in any one year. Funds may be generated from a variety of sources and not simply allocated from public funds; indeed, for the private sector all funds have to be generated from other sources. This means that these institutions cannot set fee levels until potential income has been realistically considered.

Allocation

At the same time as financial managers have to be aware of potential income, they also need to have a system for considering and allocating resources for the purchase of the various human and physical resources that are needed to fulfil the educational programmes that were agreed in the allocation phase. In general, the organization will be aware of what it needs to spend to meet the objectives and have alternative plans to secure the same objectives, but there may be differing views of the balance of resources to achieve the planned outputs and outcomes. We will consider allocation in greater detail in Chapters 5 and 6.

Implementation

Having established how potential resources and planned expenditure can be brought into balance, those responsible for budgets then have to implement the programme and ensure that the resources are used according to the plans. In this implementation phase, financial control procedures have to be in place to ensure that purchases accord to good practice and that there is no misuse of funds. This is not to say that any deviation from the original plan is not acceptable, merely that it should be in accordance with agreed financial procedures, and properly recorded and controlled. Adjusting planned expenditure is sensible when unexpected changes occur in the course of the year, but such changes must have soundly based reasons and not prevent the budget from breaking even.
Evaluation

The final stage of the budget cycle occurs after the completion of the accounting period. During this evaluation phase those responsible consider the extent to which they have, or have not, secured their objectives in the budget and explain any deviations from the intended plan. Evaluation includes assessing the quality of previous budget decisions and checking what effect they had. This is the accountability phase of the budget when findings and observations from the public authority or private board responsible for the school, college or department then form a basis for future planning and the cycle begins again.

While these four phases follow the above sequence for the budget of a financial year, at any one time a school or college can be engaged in all four stages – maintaining support in the external environment and ensuring future revenues, planning next year’s budget, implementing and monitoring the current year’s budget and, possibly, evaluating spending decisions from the previous year’s budget.

Conclusion

In this chapter we have set out the background to the conversion of funds (the inputs) through a variety of educational practices (the processes) into outputs and outcomes. Underpinning this open systems model is the need for decision-making so that scarce resources are used to secure the aims and objectives of the public or private bodies responsible for education provision at whatever level. This decision-making process is given form and structure through the budget cycle, but we also need to consider further a set of terms that enable consistent assessment and understanding of the way in which resources are used.