A Critical Investigation of Composting Methods and Implementation in Schools

Jeremy Azzopardi
Affiliation: Western Academy of Beijing, Chaoyang District, Beijing

Abstract

Food waste management has emerged as a key tool in responding to the climate crisis. Schools, as natural community centers, have the potential to drive meaningful reform and implement sustainable food waste solutions. This research analyzes the ecological, social, cultural, and economic benefits of composting, and investigates a wide array of composting methods, including aerobic decomposition, anaerobic digestion, fermentation, and vermicomposting. Through a literature review and interviews with experts, these methods are discussed and appraised. The bokashi fermentation process is evaluated by praxis. A series of four steps is then detailed and recommended for schools looking to implement sustainable food waste solutions: 1) Assess Composting Feasibility and Survey Local Community, 2) Evaluate Composting Methods and Plan Comprehensively, 3) Design Interdisciplinary Learning, and 4) Involve Wider Local and Global Community. An emphasis on decentralized composting systems, decoloniality, school individuality, and interdisciplinary pedagogical approaches is placed throughout the report.

Keywords

Composting, Food Waste Management, Organic Waste, Bokashi, Interdisciplinary Pedagogy, Schools, Decentralized Composting, Recycling, Environmental Sustainability

Introduction

The compounding climate and biodiversity crises represent the gravest threat in humanity's history. As we exceed a growing list of planetary boundaries and tipping points, the planet's ecological systems will collapse, leading to a cascade of social, economic, and political consequences. Policymakers, community leaders, organizations, and individuals are mobilizing to tackle this challenge, but schools play an outsized role in driving meaningful action and through a systems-thinking approach, modelling what an authentic sustainable organization should look like. Schools have numerous climate mitigation and carbon cutting tools: from switching to renewable energy, reducing food waste, investing in energy-saving ventilation and building insulation, utilizing sustainable transport, and so much more. It should be acknowledged that these tools are neither universally available or affordable, and that any decarbonization effort should fit the school's local context, emphasizing climate justice and decoloniality. International schools and other more economically privileged educational institutions have a moral obligation to act on climate, provide students with tools to enact change, support their surrounding community, and become models for others to follow around the globe.

Finding and implementing sustainable and innovative solutions to food waste are key to global decarbonization and food security. Reducing food waste should always be the first step, but what happens next? This report delves into the various composting methods described in literature, investigates a practical sustainable solution, and provides recommendations to schools looking to close the food waste gap.

Investigation of Composting Methods

2.1 Literature Review

Raza & Ahmad define composting as "a process converting the bio-chemical organic matter into humus (Lignoproteins) by the help of mesophilic and thermophilic organisms" and say that "a composting process seeks to connect the natural forces of decomposition to safe the conversion of organic waste into organic fertilizer." (2016, p. 102). Gonawala & Jardosh define composting as an "aerobic biological process which uses naturally occurring microorganisms to convert biodegradable organic matter into a humus like product" and claim that it is an "environmentally acceptable waste treatment method" (2018, p. 37). The recycling of organic waste can be characterized in two groups, anaerobic and aerobic, but most literature focuses on aerobic decomposition processes (Bruni et al., 2020; Gonawala & Jardosh, 2018; Martínez-Blanco et al., 2013; Raza & Ahmad, 2016; Silva et al., 2020). Bacteria are essential to decomposing organic matter in both anaerobic and aerobic methods (Raza & Ahmad, 2016).

There are a number of broad and specific positive environmental impacts of composting, as well as socioeconomic and cultural advantages. In an extensive study investigating food waste in universities in China, Qian et al. found that the average student wasted 143.16 g/d (daily) per capita per meal, with a daily per capita carbon footprint estimate of 233g of CO2eq (2022, p. 5). They observed that regional economic development strongly affected food waste levels, and calculated total food waste in Chinese universities (accounting for about 40 million young adults) in 2018 at 1.55 million tons (Qian et al., 2022). Fundamentally, composting allows for the recycling of biowaste and reduces agriculture's dependence on chemical fertilizers (Bruni et al., 2020). Gonawala & Jardosh identify four main benefits to composting: healthier soil systems and plants, convenience, money-saving, and improved sustainability compared with landfills (2018, p. 36). Adding compost to soil not only reduces methane emissions that would have otherwise come from landfills, but it also enhances the soil's ability to sequester and store carbon (Martínez-Blanco et al., 2013). In their review, Martínez-Blanco et al. cited several positive effects of compost on soil systems, including increased soil organic matter (low levels are responsible for "soil degradation, desertification, erosion, and loss of fertility"), strengthened soil structure, enhanced water retention and infiltration (thereby reducing runoff and erosion), greater resistance to soil borne diseases, enriched nutrient availability for plants, and more biological activity (2013, p. 722). They also, however, note that the composting process can lead to some greenhouse gas emissions and add undesired salt or metal content in soil (Martínez-Blanco et al., 2013).

Decentralized composting (or community composting) places this process in a circular economy context, and presents a number of additional advantages. Bruni et al. define decentralized composting as "a community-scale network in a specific neighborhood that diverts and composts biowaste in a controlled operative environment" (2020, p. 8). In their proposal of an analysis model for decentralized composting, Daskal et al. identified reduced landfill volumes (up to 50 wt%), lower collection, transportation, and treatments costs, and opportunities to educate for environmental protection as notable socioeconomic advantages of composting (2022). Bruni et al. further mention favorable impacts on local agriculture and economy, such as higher quality compost that can more effectively be used as fertilizer (due to more efficient separation and reduced inter-contamination), the creation of small businesses and community organizations, lower costs of compost fertilizer (as opposed to more expensive chemical fertilizers), and the reduced need to construct and operate waste management facilities (2020).

Fermentation is a composting-like alternative process that has recently gained prominence in horticulture and offers its own unique benefits. Originally developed by Professor Teruo Higa in the 1980s at the University of the Ryukyus in Japan, bokashi relies on adding "effective microorganisms" (EM) to organic waste in an anaerobic process (Ginting, 2019; Merfield, 2013). Its exact definition varies with Wang et al. simply commenting that "strictly speaking, bokashi is not aerobic composting, but anaerobic digestating”, while Ginting states that bokashi is a “system of odorless composting by selected “effective microorganisms”” (2021, p. 5; 2019, p. 142). Bokashi’s positive effects on soil systems are similar to traditional composting with its fertilizer enhancing the physicochemical and microbiological properties of soil, and improving the long-term growth, yield, and quality of crops (Gashua et al., 2022; Yamada & Xu, 2001). The benefits of effective microorganisms alone have been disputed, with one study finding that they had no effect on soil quality and yields, though the authors noted that the application of bokashi resulted in positive nutrient inputs to the soil and increased yields (Mayer et al., 2010). A significant advantage of bokashi over other traditional composting systems is the efficiency of the process, with effective microorganisms-4 able to accelerate the decomposition of organic waste in up to one week, while other composting processes may take several months (Jassey et al., 2022). Gashua et al. found that “good-quality bokashi fertilizer can be produced within 30 days”, with great potential implications for smallholders and agriculture more broadly (2022, p. 2). Overall, further research is needed to confidently determine the effects of bokashi and the potential opportunities for its use on a larger scale, with several academics noting the lack of established knowledge surrounding the composting method (Ginting, 2019; Merfield, 2013; Yamada & Xu, 2001).

2.2 Interview with Dr. Jacques Gabriel Fuchs

An online video interview with Dr. Jacques Gabriel Fuchs, an expert composting practitioner at the Department of Crop Sciences within the Research Institute of Organic Agriculture (FiBL), was conducted to gain specialist knowledge into sustainable food waste solutions, their application in households, schools, and communities, as well as further insight into existing policies in Switzerland. In the interview, he commented on the importance of assessing inputs and desired outputs when establishing a composting system, outlined the ecological and socioeconomic benefits of composting, described the waste management policies of the Swiss government, and highlighted pedagogical and community opportunities for schools looking to compost. An abridged transcription of the interview is available in the Appendix.

2.3 Interview with Dr. Yuhui Qiao

An email interview with Dr. Yuhui Qiao, an associate professor in the Faculty of Resource and Environmental Management at the China Agricultural University, was conducted to gain specialist, academic insight into sustainable food waste solutions and their application in households, schools, and communities. In the interview, she commented on the advantages of bokashi for households, described various ecological and socioeconomic benefits of composting, and outlined a series of important steps for communities and schools looking to implement composting. A full version of the interview is available in the Appendix.

Praxis

The 'bokashi' system was chosen as the most feasible food waste solution, requiring little logistical organization, and minimizing risk associated with odor and scavengers. This section outlines bokashi experimentation in a household setting but gives further insights into potential application on a school-wide scale.

3.1 Method

A 10L bokashi bin procured from the Bulk House, a zero-waste social enterprise based in Beijing, was used for data collection. The bin was manufactured by Biolan, a Finnish horticulture business, and manufacturer instructions in English were followed. A set of Chinese instructions written by the Bulk House were also consulted. Effective microorganisms were applied in the form of a spray, with a minimum of five squirts after each additional layer. The liquid (also known as 'bokashi tea') was extracted once every three days. After the bin was full, it was completely sealed for a further 20 days to facilitate adequate fermentation. Once complete, the organic waste was placed into three soil locations in a garden within Dragon Bay Villas, a residential compound in Shunyi District, Beijing, China. The waste was layered and covered with soil at a minimum depth of 20cm, and avoided any existing plants or roots.

3.2 Data

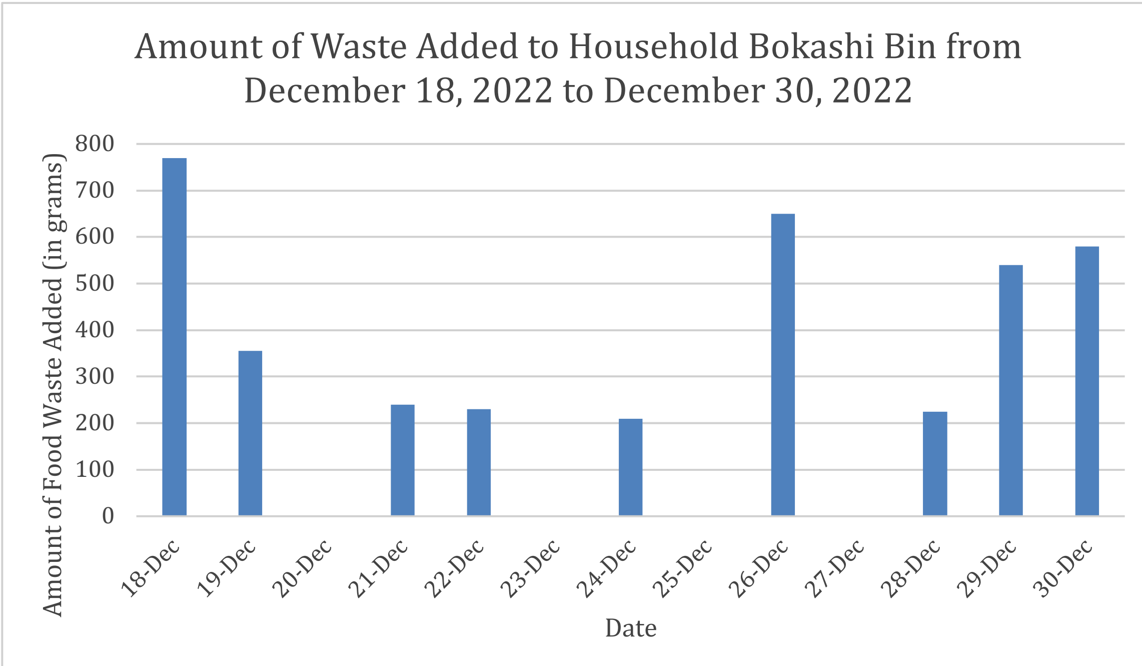
Table 1 –

Amount of Waste Added to Household Bokashi Bin from December 18, 2022 to December 30, 2022 and Qualitative Observations

Date (DD/MM/YY)	Amount of Waste Added to Bin	Qualitative Observations of Waste Contents
18/12/2022	770g	Apple peels, vegetable scraps, coffee filters
19/12/2022	355g	Citrus (lemon and orange) peels, vegetable scraps
21/12/2022	240g	Coffee filters, tea bags, vegetable scraps
22/12/2022	230g	Vegetable scraps (bell pepper, garlic, onion, avocado)
24/12/2022	210g	Lemon peels, tea bags, coffee filters
26/12/2022	650g	Vegetable scraps, eggshells, coffee filters, fruit peels
28/12/2022	225g	Leafy vegetable scraps, tea bags, orange peels
29/12/2022	540g	Eggshells, vegetable scraps, coffee filters, tea bags
30/12/2022	580g	Orange peels, vegetable scraps, coffee filters, tea bags

Total Waste: 3,800g (3.8kg); Total Liquid Extracted from Bin: 300ml

Graph 1 –



Pictures of the bokashi process are available below:

Figure 1 - 18/12/2022

Figure 2 - 28/12/2022

Figure 3 - 29/12/2022

Figure 4 - 30/12/2022

Figure 5 - Transfer of bokashi into soil (19/01/2023)

Figure 6 - Bokashi after 5 weeks (24/02/2023)

Figure 7 - Bokashi after 5 weeks (24/02/2023)

Figure 8 - Bokashi after 5 weeks (24/02/2023)

3.3 Discussion

The bokashi system was efficient, easy to implement, and straightforward. It did not require extensive management and each addition to the bin took less than 10 minutes. The contents of the organic waste mainly included citrus peels, vegetable scraps, coffee filters, and tea bags. The total of 3,800g of organic waste collected is around the same as the average food waste each day of 26 students, as calculated by Qian et al. (2022, p. 5). The bucket was purchased at a low and reasonable cost that would likely be even lower at wholesale price. Figures 6, 7, 8 show that decomposition at 5 weeks following bokashi was successful, with most organic waste outlined in Table 1 becoming indistinguishable from the soil. Citrus peels and egg shells could be identified, but other fruit and vegetable peels, food scraps, and tea bags were no longer identifiable in the soil. This experiment was conducted at a very small scale and only for the purpose of assessing feasibility, so further research should be conducted to scalability of bokashi and its effects on soil systems. The experience presented many learning opportunities, notably the basics of gardening, and the science of soil systems.

Policy Recommendations

Based on the findings and outcomes of this report, a four-step process is proposed for composting implementation in schools:

4.1 Assess Composting Feasibility and Survey Local Community

Schools should only compost if the compost can be used. This does not necessitate having a running garden or space to compost on-campus, as schools can also partner with organizations, businesses, or groups within their vicinity. Examples may include public gardens, environmental non-governmental organizations, and small businesses. Schools should leverage existing contacts and local expertise to ensure they can implement the most appropriate solution. In general, on-campus composting would be appropriate if a garden or green space is available, and if there are no other nearby potential partnerships, schools can also consider disposing of food waste through industrial composting services, which can be privately or publicly owned depending on the country.

4.2 Evaluate Composting Methods and Plan Comprehensively

If schools deem that composting can be feasibly implemented on-campus or nearby, then schools should evaluate available composting methods. Local laws and regulations, respect for local/traditional composting techniques, spatial limitations, cost, safety, and human resources should be some of the most important considerations when assessing different options. The different methods can include manual aerobic composting, industrial anaerobic digestion, bokashi fermentation, and vermicomposting, but local expertise should ideally be consulted. When selecting an appropriate method, it is essential for schools to reflect on their desired outcome and purpose of composting, and this differs based on where the compost will go and what it needs to be used for. Schools should also consider their inputs, i.e. the type of organic waste generated, as different composting methods differ in suitability for decomposing kitchen waste or garden waste, for example. Once a method is selected, extensive pedagogical, logistical, and administrative planning should be conducted. A composting culture should be cultivated to ensure the long-term sustainability of the project. In the short-term, a team of dedicated people should be established to manage the compost, including during school holidays and campus closures. The desired quantity of compost should also be predetermined. Any composting project requires holistic planning, and should not rely on input from a single school section or department.

4.3 Design Interdisciplinary Learning

Composting presents an enormously valuable pedagogical opportunity. An on-campus composting project especially, should utilize a student-centered approach, emphasizing student leadership and agency during and after implementation. Composting, as well as gardening more broadly, can serve as a hub for experiential learning in a number of disciplines, including mathematics, sciences, social studies/humanities, arts, and language studies. Some sample project ideas, applicable to any curriculum, can be found below:

Mathematics –

- Model the growth of worms in vermicompost
- Analyze trends of physicochemical properties in compost over time

Sciences –

- Investigate the role of soil systems in the carbon cycle
- Assess compost's carbon-to-nitrogen ratio and make recommendations for improvement
- Compare and contrast aerobic and anaerobic composting methods
- Measure the nutrient content of 'bokashi tea'
- Evaluate the fertilizing elements and quality of the compost

Social Studies –

- Research indigenous and traditional composting methods from around the world
- Analyze the factors affecting food waste levels across countries

Arts –

- Create a work expressing a sense of community

- Curate a photo journal documenting the composting process

Language Studies –
- Create a composting guide in a different language
- Interview composting practitioners

4.4 Involve Wider Local and Global Community

Once a composting project has been successfully established, schools should make an effort to connect with other schools, organizations, and groups in their community. Composting is fundamentally a grassroots-driven initiative, and this type of 'decentralized composting' includes a number of pedagogical, cultural, economic, and environmental multiplier benefits for the local community. The project's success can be used to lobby for change to better address food waste on a local or national level, however schools should adhere to decolonial principles by ensuring that their composting epistemology is not imposed on others (particularly through avenues such as 'service learning'), as each local context is different. International networks should be leveraged to share the school's work with others around the globe and inspire more schools to take action.

Conclusion

The extensive research of composting methods and application of bokashi in a household context shows the massive potential for schools to implement composting. The bokashi method was found to be versatile, efficient, and accessible to beginners. The findings of this review highlight the additional social and cultural benefits of a composting culture when decentralized approaches are applied, and schools have the ability to kickstart such a community system. This investigative report proposes four key steps to any school looking to improve its food waste management: 1) Assess Composting Feasibility and Survey Local Community, 2) Evaluate Composting Methods and Plan Comprehensively, 3) Design Interdisciplinary Learning, and 4) Involve Wider Local and Global Community. Within the third step, the report outlines a range of multidisciplinary pedagogical ideas for implementation. These steps emphasize the individuality of each school, leverage indigenous, local, and/or traditional knowledge and expertise, and lay the foundations for a cultural shift in the community. Further research should be conducted to assess school food waste management policies and better understand practices or approaches that aid in delivering a culture change.

Acknowledgements

I am deeply grateful to Dr. Jacques Gabriel Fuchs and Dr. Yuhui Qiao for their acceptance of my interview requests. I would like to thank a number of faculty members at the Western Academy of Beijing, including Mr. Rob Clark, Ms. Pim Arora, Mr. Michael Tharamangalam, and Mr. Dan Bulman, who reviewed my report and provided suggestions. I also wish to thank the external reviewers of this project, Dr. Alejandra Cantu from the Global Online Academy, and Dr. Jacques Gabriel Fuchs, both of whom provided an additional layer of oversight and expert feedback. I would also like to thank my supervisor, Mr. Chris Hayden, and my family, for their support and guidance throughout this project.

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Appendix

8.1 Abridged Interview with Dr. Jacques Gabriel Fuchs

A full recording can be obtained from the author, but a text abbreviation, corresponding with asked questions written in **bold**, is provided below:

1. **What are some specific benefits of composting in improving soil health? How does composting enrich soil nutrition?**

There are different aspects of how composting benefits soil health. Firstly, compost serves as a fertilizer, and not only enrich the soil with nitrogen, phosphorus, and potassium, but also other micronutrients. Secondly, the humus material improves the soil structure, water capacity, and reduces erosion. Carbon can be fixed into the soil, and good-quality compost can also reduce plant disease. During the maturation of the compost, important fungi are developed, and these will protect the plant from soilborne diseases.

2. **Why does the decomposition process take a long time and are there methods to accelerate this part of the composting process?**

The length of the composting process depends on the material – for example, wood takes longer to decompose than salad leaves. The fungi need time to do their job. The process can be accelerated with careful and effective management, specifically, checking to see whether there is enough water, and mixing sufficiently. At the beginning of the process, inoculating the pile with mature compost or other microorganisms will improve the process.

3. **Besides the ecological benefits of composting, are there any economic or social benefits to composting?**

The exact benefits depend on the country's politics, culture, geography, and culture. Waste management is generally a big economic cost, so using organic waste to produce a product of value can be extremely beneficial for local agriculture and the broader economy. With recent price increases in fertilizer, composting to help secure and improve soil fertility is also a big social impact for food security.

In Switzerland, local governments usually collect organic waste and operate an industrial composting facility. People are required to pay for their organic waste (for example, 1 ton of organic waste means you have to pay between 80CHF and 130CHF), but if you make your own compost, and especially mature compost, the cost is covered by the sale of the compost. This encourages people to compost and contribute to community gardening initiatives. Depending on the input material and desired output, authorities can plan the best composting system for their community.

4. **What processes should be in place at a community and household level for an effective composting system?**

Grassroots education is key to the process to teach proper waste sorting, and schools should play a large role in this. People need to be motivated to sort, and this can be done through incentives. The Swiss government heavily fines people who do not sort, as this waste then has to be incinerated. Local government can facilitate waste collection, enforce environmental standards, and ensure industrial composting facilities operate according to these standards. In Switzerland, these plants are regularly inspected and monitored to check the quality of the compost. There should also be education on how much fertilizer is needed for gardens and plants, because you can end up with too much compost and overfertilization.

5. **What is the most feasible composting method for households (especially those without access to a garden)?**

It only makes sense to compost at home if we can use the compost. If there is no nearby garden and can't use the compost themselves, then it's better to collect the organic waste and send it to a professional composting facility. However, composting at home is very simple, does not require complicated methods, and can be completed at a reasonable scale.

6. **What are your views on the bokashi system? How useful is it for households?**

Bokashi is not really composting, but it is an anaerobic conservation of organic waste. It can still be used as fertilizer, but like all other composting, it doesn't make sense if you cannot use it nearby.

7. **Do you know of any successful implementation of composting on a school-wide scale? What tips or advice would you have for a school looking to initiate composting?**

Composting at school is an excellent educational experience and helps to build a broader recycling culture in the community. Students learn and see what happens with the organic waste they produce. They can participate in the composting process and use the compost for their own garden plants. Teachers can plan a variety of activities around the compost, like in math, students can model the growth of compost worms or in science, students can learn about soil properties and the species present in soil. Children are also good 'multiplicators' and can encourage careful recycling of organic waste at home and beyond. Implementing composting in schools is a good investment for the future.

Schools should start with a simple system, just like home composting. Classes can share responsibility on a rotating schedule. It's important to have faculty responsible for the technical process, but students should be involved as much as possible. The compost needs to be maintained even when the school is closed.

8.2 Full Interview with Dr. Yuhui Qiao

A full copy of the answers, corresponding with asked questions written in **bold**, is provided below:

1. **What are some specific benefits of composting in improving soil health? How does composting enrich soil nutrition?**

Composting can provide several benefits to soil health:

(1) Improve soil structure: Compost helps to improve the physical quality of soil, making it more porous, aggregates and low density and allowing roots to penetrate deeper and easier.

(2) Increase nutrient content: Compost contains essential nutrients such as nitrogen, phosphorus, and potassium, which help to nourish plants and promote healthy growth.

(3) Reduce soil erosion: The addition of compost to soil helps to improve its ability to retain moisture and reduces the risk of soil erosion.

(4) Support beneficial microorganisms: Compost provides a habitat for beneficial soil microbes such as bacteria and fungi, which help to break down organic matter and improve soil fertility.

(5) Reduce synthetic fertilizers for cropping: Compost can help to reduce the need for synthetic fertilizers and pesticides, leading to a more sustainable and eco-friendly approach to agriculture.

Composting enriches soil nutrition by adding organic matter to the soil. As the organic matter in compost breaks down, it releases essential plant nutrients, such as nitrogen, phosphorus, and potassium, which help to improve soil fertility and support healthy plant growth.

In addition, composting can also help to balance the pH of soil. Soils that are too acidic or alkaline can limit the availability of certain nutrients to plants. Compost helps to adjust soil pH, making it more neutral and allowing plants to access the full range of nutrients they need.

Compost also contains beneficial microorganisms, such as bacteria and fungi, that help to break down organic matter and improve soil structure. This can lead to improved water-holding capacity, improved soil aeration, and improved root growth, which can all have a positive impact on plant health.

2. **How does bokashi differ from aerobic composting? Does one offer more benefits to soil systems over another?**

Bokashi and aerobic composting are two different methods of composting organic waste.

Aerobic composting is a traditional method that involves piling organic waste in a compost bin or heap, and regularly turning the material to provide oxygen which encourages the growth of microbes that break down the waste into compost. This process typically takes several months and produces heat as the material decomposes.

Bokashi composting, on the other hand, is an anaerobic (without oxygen) composting method that uses a mixture of microorganisms, including lactic acid bacteria, to ferment food waste in a tightly sealed container. This process takes about 2 weeks and produces a fermented compost that can then be added to soil to provide nutrients and improve soil structure.

Both methods can offer benefits to soil systems, but Bokashi may be more convenient for some people because it takes up less space, produces less odour, and can be used to compost meat, dairy and other food waste that cannot be composted in a traditional compost pile. On the other hand, aerobic composting is a more well-established and widely used method that is more suitable for large scale composting operations.

3. **Besides the ecological benefits of composting, are there any economic or social benefits to composting?**

Yes, besides the ecological benefits, composting can have a number of economic and social benefits as well. Some of the most significant include:

（1） Cost savings: Composting can help reduce the amount of waste sent to landfills, which can lower disposal costs and potentially reduce the need for new landfills to be built.

（2） Job creation: The composting industry can create new jobs in areas such as collection, transportation, processing, and marketing.

（3） Local food production: Composting can support local food production by providing farmers with a cost-effective and sustainable source of fertilizer and soil amendment.

（4） Community engagement: Composting can be a community-building activity that brings people together to work on a common goal. Community composting programs can also help educate people about waste reduction, composting, and sustainable living practices.

（5） Climate change mitigation: By reducing the amount of organic waste sent to landfills, composting can help reduce methane emissions, a potent greenhouse gas.

（6） Soil health: Composting can help improve soil health by adding organic matter, nutrients, and beneficial microbes to the soil, which can increase its ability to retain water, improve plant growth, and support overall ecosystem health.

4. **How can composting be implemented at a large community scale? What processes or policies should be in place?**

Implementing composting at a large community scale requires careful planning, collaboration between various stakeholders, and the development of effective processes and policies. Here are some steps that can help:

（1） Assess local resources and needs: It is important to understand the existing waste management infrastructure, the types of waste being generated, and the local demand for compost. This information can help identify areas where composting can be most effectively integrated into the existing system.

（2） Develop a waste management plan: A comprehensive waste management plan should be developed that includes targets for waste reduction, recycling, and composting. This plan should also outline the roles and responsibilities of various stakeholders, including the community, local government, and waste management companies.

（3） Establish partnerships: Partnerships between local government, waste management companies, businesses, and community organizations can help ensure the success of a composting program by leveraging the resources and expertise of each partner.

（4） Implement collection and processing: Collection of compostable waste should be integrated into existing waste collection systems or new collection programs should be established. Once the waste has been collected, it should be processed into compost using appropriate technologies such as aerobic or anaerobic composting, depending on the local conditions and resources.

（5） Market and distribute the compost: The compost should be marketed and distributed to local farmers, community gardens, and other users. A pricing strategy should be developed to ensure that the compost is affordable and accessible to local residents.

（6） Monitor and evaluate the program: Regular monitoring and evaluation of the composting program is important to ensure that it is meeting its goals and targets. This can include tracking compost production, quality, and sales, as well as conducting surveys to assess the satisfaction of program participants.

5. **What is the most feasible composting method for households (especially those without access to a garden)?**

For households without access to a garden, Bokashi composting is often the most feasible method of composting. Bokashi is an anaerobic (without air) composting method that uses a mixture of microorganisms, including lactic acid bacteria, to ferment food waste in a tightly sealed container. This method produces a fermented compost that can be added to soil to provide nutrients and improve soil structure, but does not require a large space for composting.

Bokashi composting is well-suited for households because it is a compact and convenient method of composting food waste, including meat, dairy, and other foods that cannot be composted using traditional aerobic composting methods. Bokashi composting can be performed in small containers, such as a kitchen-countertop Bokashi bucket, and the fermented compost produced can be stored until it is ready to be added to soil or disposed of.

6. **Do you know of any successful implementation of composting on a school-wide scale? What tips or advice would you have for a school looking to initiate composting?**

Yes, there have been several successful implementations of composting on a school-wide scale.

Here are some tips or advice for a school looking to initiate composting:

(1) Develop a plan: Decide on the goals and objectives of the composting program, and create a plan of action.

(2) Involve students and staff: Get students and staff involved in the composting process by educating them about the benefits of composting and assigning roles and responsibilities.

(3) Choose the right equipment: Select composting equipment that is appropriate for the school's needs and budget.

(4) Set up collection and sorting stations: Establish collection and sorting stations throughout the school to make it easy for students and staff to compost food waste.

(5) Monitor and maintain the compost: Regularly monitor the compost and make any necessary adjustments to ensure that it is breaking down properly.

(6) Use the compost: Use the compost in school gardens, landscaping, or other appropriate applications to close the loop and fully realize the benefits of composting.